BOSCH INU. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 h Edition : 18.02.91

: 6.7.90 Replaces Test oil : ISO-4113

Combination no. : 0 401 846 826

Injection pump

Pump designation: PE6P120A320RS3178

: 0 411 826 752 EP type number

Governor

Governor design. : RQV250...1025PA921-2

Governer no. **: 0** 421 813 785

Customer-spec. information Customer : VOLVO

Engine : TD122FS

1st version kW : 287.0 Rated speed : 2050

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 85...95

Test nozzle holder

assembly : 1 688 901 019

Opening 1

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70

: (3.55...3.75)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing **: 0-60-120-**180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 25.2...25.4

100 s: (24.9...25.7)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 250.0Rack travel in mm: 4.8...5.1 Del.quantity cm3/: 1.8...2.3

100 s: (1.5...2.5)

cm3 : 0.5Spread 100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1090 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 1200

Del.quantity : 252.0...254.0 1000 : (249.0...257.0)

Spread cm3: 5.00

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 116...124

Testing:

1st rack travel in: 13.00

rom : 1055...1065

2nd rack travel in: 4.00

Speed rpm : 1140...1170 4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 59...67

Testing:

rpm : 100 Speed Minimum rack trave: 6.40 rpm : 250

Rack travel in mm : 4.80...5.10

CONSTANT REGULATION

rpm : 250...400 Speed

Aneroid/Altitude Compensator Test

1st version Setting

Speed rpm : 500 Pressure hPa : 1200

: 14.00...14.10 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.30...10.50

2nd pressure hPa : 120

Rack travel in m: 0.20...0.30

3rd pressure hPa : 810

Rack travel in m: 3.10...3.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 700 Del.quantity cm3/ : 163.0...165.0

1000 s: (160.0...168.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.00

rom : 1055...1065

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 270.0...310.0 1000 s: (266.0...314.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250

Rack travel in mm : 4.80...5.10 Del.s:antity cm3/: 18.0...23.0 1000 s: (15.5...25.5)

cm3 : 5.00Spread

1000 s: (7.00)

Remarks:

Delivery—clve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

Start-of-delivery setting with ROBO

diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 4.20...4.30 : (4.15...4.35) Note remarks Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order : DAF 11,7 h : 18.02.91 Test sheet Edition : 5.3.90 Replaces : ISO-4113 Test oil : 0-60-120-180-240-300 Phasing Combination no. : 0 401 846 916 : 0.50 (0.75) Tolerance + - ° Injection pump BASIC SETTING Pump designation: PE6P12OA32ORS3248 EP type number : 0 411 826 792 1st speed rpm: 850 Governor Governor design. : RQ250/1000PA832-3 Rack travel in mm : 12.50...12.60 Governer no. : 0 421 801 506 Del.guantity cm3/: 20.9...21.1 Customer-spec. information Customer : DAF 100 s: (20.6...21.4) Engine : WS 242 cm3 : 0.5Spread 1st version kW : 242.0 100 s: (0.9) : 2000 Rated speed rpm : 250.0 2nd speed TEST BENCH REQUIREMENTS Rack travel in mm: 6.5...6.7 Del.quantity cm3/: 1.4...2.0 Test oil **100 s: (1.1...2.3)** inlet temp. °C : 38...42 cm3 : 0.8Spread 100 s: (1.2) Overflow valve : 1 417 413 025 GUIDE SLEEVE POSITION Control-lever position Inlet press., bar: 1.50 Degree: -1 rpm : 550 Speed Rack travel in mm: 15.20...16.40 Test nozzle holder assembly : 1 688 901 019 FULL LOAD DELIV. AT FULL LOAD STOP Opening pressure, bar : 207...210 1st version Speed rpm : 850 Orifice plate Aneroid pressure h: 1000 diameter mm : 0,8 Del.quantity : 209.0...211.0 1000 : (206.0...214.0) : 5.00 Spread cm3Test Lines : 1 680 750 075 1000 : (9.00) Outside diameter RATED SPEED x Wall thickness x Length mm : 8.00X2.50X1000 1st version (A) Injection pump setting values Setting point: Insp. values in parentheses rpm Set equal delivery quant. Rack travel in mm: 15.8 per values Testing: 1st rack travel in: 11.50 Speed rpm : 1035...1050 BEGINNING OF DELIVERY Test pressure, bar: 25...27

2nd rack travel in: 4.00

rpm : 1125...1155 Speed 4th rack travel in: 1250 Speed rom : 0.00...1.40LOW IDLE 1 Setting to ' w/out bumper spring : 250 Rack tra ... mm : 6.0 Testina: Speed rpm : 100 Minimum rack trave: 7.50 rpm : 250 Speed Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 Speed : 335...375 **FIDE** TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed nom : 850 Rack travel in m: 13.50...13.60 2nd speed rpm : 1000 Rack travel in m: 13.40...13.60 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 CD(III Pressure hPa : 1000 : 12.50...12.60 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 11.00...11.20 2nd pressure hPa : 340 Rack travel in m: 12.10...12.20 3rd pressure hPa : 250 Rack travel in m: 11.40...11.60 FUEL DELIVERY CHARACTERISTICS 1st version

full load rack tr: 11.50 rpm : 1035...1050 Speed

LOW IDLE

Speed rpm : 250 Rack travel in mm : 6.50...6.70 Del.quantity cm3/: 14.0...20.0 1000 s: (11.0...23.0) Spread cm3: 8.00

1000 s: (12.00)

Remarks:

:

Speed

BREAKAWAY

1st version

Aneroid pressure h: -

1mm rack travel less than

rpm : 600 Del.quantity cm3/: 164.0...166.0

1000 s: (161.0...169.0)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: MB 11,0 x 1 : 01.03.91 Test sheet Edition : 20.12.90 Replaces : ISO-4113 Test oil

Combination no. : 0 401 846 942

Injection pump

Pump designation : PE6P110A320LS3851 EP type number : 0 411 816 765

Governor

Governor design. : RQ300/1050PA187-33

Governer no. : 0 421 801 574

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM441

1st version kW : 151.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50 : (4.35...4.55) Rack travel in mm : 9.00...12.00

Firing order : 6-3-5-2-4-1

Phasina : 0-60-120-180-240-300

Tolerance $+ - \cdot : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

rom : 10501st speed

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 11.8...12.0

100 s: (11.5...12.2)

cm3 : 0.8Spread

100 s: (1.3)

rpm : 300.02nd speed Rack travel in mm: 6.5...7.1 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.4)

Spread cm3 : 0.6

100 s: (1.1)

GUIDE SLEEVE POSITION Control-lever position Degree: -1

rpm : 650

Rack travel in mm : 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

Del.quantity : 118.0...120.0 1000 : (115.5...122.5)

Spread cm3: 8.50 1000 : (13.00)

RATED SPEED

1st version

Setting point:

Speed **LDW** Rack travel in mm: 13.5

Testing: 1st rack travel in: 10.00 Speed rpm : 1090...1100 2nd rack travel in: 4.00 rpm : 1170...1200 Spead 4th rack travel in: 1300 Speed rpm : 0.00...2.00 LOW IDLE 1 Setting point w/out bumper spring : 300 rpm Rack travel in mm: 6.8 Testing: rpm : 200 Speed Minimum rack trave: 8.40 rpm : 300 Speed Rack travel in mm: 6.50...7.10
Rack travel in mm: 2.00
Speed rpm: 390...430 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 600 Speed Del.quantity cm3/: 117.0...122.0 1000 s: (114.0...125.0) cm3 : 11.00 Spread 1000 s: (14.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.00 rpm : 1090...1100 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0) Remarks:

Prestroke mm : 3.40...3.50 : (3.35...3.55) Rack travel in mm : 15.00...19.00 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : 1-8-7-2-6-5-4-3 Firing order Test sheet : KHD 9,6 x Edition : 27.02.91 : 15.1.88 Replaces Test oil : ISO-4113 : **0-45-90-135-**180-225-Phasing Combination no. : 0 401 848 792 270-315 Tolerance + - ° : 0.50 (0.75) Injection pump Pump designation : PE8P120A920/5LS3208 Time to cyl. no. : 1 EP type number : 0 411 828 721 Governor BASIC SETTING Governor design. : RQ325/1150PA879 Governer no. : 0 421 801 417 rpm: 1150 1st speed Customer-spec. information Rack travel in mm : 12.30...12.40 Customer : KHD Del.quantity cm3/: 18.9...19.1 Engine : BF8L513CP 100 s: (18.6...19.4) 1st version kW : 294.0 : 2300 Rated speed Spread cm3 : 0.6TEST BENCH REQUIREMENTS 100 s: (1.0) Test oil rpm : 325.02nd speed inlet temp. °C : 38...42 Rack travel in mm: 6.5...6.7 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5) Overflow valve : 1 417 413 025 Spread cm3 : 0.9100 s: (1.3) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Test nozzle holder Control-lever position assembly : 1 688 901 019 Degree: -1 rpm : 700 **Opening** Rack travel in mm: 14.70...16.30 pressure, bar : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate diameter mm : 0,8 1st version rpm : 1150 Speed Aneroid pressure h: 900 Test lines : 1 680 750 067 Del.quantity : 189.0...191.0 1000 : (186.0...194.0) cm3 : 6.00 1000 : (10.00) Outside diameter Spread x Wall thickness x Length mm : 6.00x1.50x1000 RATED SPEED (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. per values Setting point: rpm BEGINNING OF DELIVERY Rack travel in mm: 15.5 Test pressure, bar: 25...27

Testing:

1st rack travel in: 11.30

rpm : 1190...1200 Speed

2nd rack travel in: 4.00

Speed rpm : 1260...1290 4th rack travel in: 1400

rpm : 0.00...1.00Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 325 Rack travel in mm : 6.6

Testing:

rpm : 100 Speed Minimum rack trave: 8.10

rpm : 325

Rack travel in mm : 6.50...6.70

Rack travel in mm : 2.00

: 400...440 Speed rom

CONSTANT REGULATION

rpm : 300...510 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

rom : 1150 1st speed

Rack travel in m: 12.30...12.40

2nd speed rpm : 600

Rack travel in m: 12.30...12.50

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 400 hPa : 900 Pressure

: 12.80...12.90 Rack travel mm

Measurement

Speed 1/min: 400

1st pressure hPa : -

Rack travel in m: 9.40...9.60

2nd pressure hPa : 230 Rack travel in m: 9.80...9.90

3rd pressure hPa : 350 Rack travel in m: 10.90...11.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 400

Del.quantity cm3/: 86.0...88.0

1000 s: (83.0...91.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 235.0...265.0 1000 s: (230.0...270.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION

Rail car

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: MB 14,7 L 3 Test sheet : 18.02.91 : 15.11.90 Edition Replaces Test oil : ISO-4113

Combination no. : 0 401 848 806

Injection pump

Pump designation: PE8P110A320LS3846-1

EP type number : 0 411 818 719

Governor

Governor design. : RQ300/1050PA187-28

: 0 421 801 492 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442

: 213.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 101 assembly

Opening.

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm

: (4.35...4.55)

Rack travel in mm : 9.00...12.00 Firing order : 8-7-2-6-3-5-4-1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 12.2...12.4

100 s: (11.9...12.6)

Spread cm3 : 0.8

100 s: (1.3)

rpm : 300.02nd speed

Rack travel in mm: 6.3...6.9

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.4)

cm3 : 0.6

100 s: (1.1)

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 650

Rack travel in mm : 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Spread

Speed ~pm : 1050

1000 : (119.5...124.0) Del.quantity

Spread cm3 : 8.50

1000 : (13.00)

RATED SPEED

1st version

Setting point:

rpm : 650

Rack travel in mm: 13.5

Testing: 1st rack travel in: 10.20 rpm : 1080...1090 Speed 2nd rack travel in: 4.00 Speed rpm: 1160...1190 4th rack travel in: 1300 rpm : 0.00...2.00Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.6 Testing: Sper-d rpm : 200 Minimum rack trave: 8.20 Speed rpm: 300
Rack travel in mm: 6.30...6.90
Rack travel in mm: 2.00 Speed : 390...430 man FUEL DELIVERY CHARACTERISTICS 1st version 1000 s: (14.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.20 rpm : 1080...1090 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0) Remarks: :

BOSCH INJ. PUMP TEST SPECIFICATIONS · 3.70...3.80 Prestroke mm : (3.65...3.85)

Rack travel in mm : 14.50...15.50

Firing order : 6-2-4-1-5-3 Note remarks : MAN 11,9 u1 : 26.02.91 Test sheet Fdition Replaces : 25.1.91 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 036 740 Tolerance $+ - ^{\circ} : 0.50 (0.75)$ Injection pump Time to cyl. no. : 6 Pump designation : PES6P120A720/3LS3255 : 0 412 026 739 EP type number BEGINNING OF DELIVERY DIFFERENCE Governor Governor design. : RQ300/1000PA813-13 betw. rack trav. m: 5.90...6.10 : 0 421 801 529 Governer no. & maximum rack tra: 15.0...16.0 Difference ° CS : 2.00...4.00 Customer-spec. information Customer : MAN BASIC SETTING Engine : D2866LF03 1st speed rpm: 700 : 273.0 1st version kW Rack travel in mm : 15.00...15.10 Rated speed : 2000 Del.quantity cm3/: 24.2...24.4 TEST BENCH REQUIREMENTS 100 s: (23.9...24.7) Test oil inlet temp. °C : 38...42 cm3 : 0.5Spread Overflow valve 100 s: (0.9) : 1 417 413 025 rpm : 300.02nd speed Rack travel in mm : 4.9...5.3 Del.quantity cm3/ : 1.7...2.3 100 s: (1.4...2.6) Spread cm3 : 0.8 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 019 100 s: (1.2) Opening

: 207...210 pressure, bar GUIDE SLEEVE POSITION Control-lever position Degree: -2

Orifice plate diameter mm : 0,8 Speed

Test lines : 1 680 750 067 FULL LOAD DELIV. AT FULL LOAD STOP

Outside diameter 1st version

x Wall thickness Speed rpm : 700 : 6.00x1.50x1000 x Length mm Aneroid pressure h: 1200

Del.quantity : 242.0...244.0 1000 : (239.0...247.0) cm3 : 5.00 (A) Injection pump setting values Insp. values in parentheses Spread

rpm : 550

Rack travel in mm: 19.20...20.80

Set equal delivery quant. 1000 : (9.00) per values

RATED SPEED BEGINNING OF DELIVERY Test pressure, bar: 30...32 1st version

Setting point: Speed : 550 rom Rack travel in mm: 20.0 Testina: 1st rack travel in: 13.80 Speed rpm : 1045...1060 2nd rack travel in: 4.00 rpm : 1160...1190 Speed 4th rack travel in: 1300 rpm : 0.00...1.06 Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 5.0 Testing: based2 rpm : 200 Minimum rack trave: 6.50 Speed : 300 rom Rack travel in mm : 4.90...5.10 Rack travel in mm : 2.00 : 360...400 Speed rom TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 14.80...14.90 2nd speed rpm : 700 Rack travel in m: 15.30...15.50 Aneroid/Altitude Compensator Test 1st version Settina Speed : 500 rpm hPa : 1200 Pressure : 15.00...15.10 Rack travel mm Measurement 1/min : 500 Speed 1st pressure hPa : -Rack travel in m: 11.70...11.90 2nd pressure hPa : 110 Rack travel in m: 12.00...12.10 3rd pressure hPa : 470 Rack travel in m: 13.70...14.10 START CUT-OUT 1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.80

Speed rpm : 1045...1060

INTERMEDIATE RATED SPEED Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 220.0...240.0

1000 s: (216.0...244.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 4.90...5.30 Del.quantity cm3/ : 17.0...23.0 1000 s: (14.0...26.0)

Spread cm3 : 8.00 1000 s: (12.00)

Remarks:

: MAN-NR. 0-7050

Setting and blocking of pointer of start-of-delivery sensor on cyl. 6 start of delivery BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.70...3.80 : (3.65...3.85) Note remarks Rack travel in mm : 14.50...15.50 Firing order : 6-2-4-1-5-3 Test sheet : MAN 11,9 u Edition : 26.02.91 Replaces : 19.6.90 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 036 741 Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 6 Pump designation : PES6P120A720/3LS3255 EP type number : 0 412 026 739 BEGINNING OF DELIVERY DIFFERENCE Governor betw. rack trav. m: 5.90...6.10 & maximum rack tra: 14.5...15.5 Difference ° CS : 2.00...4.00 Governor design. : RQV300...1000PA876-6 : O 421 813 866 Governer no. Customer-spec. information Customer : MAN BASIC SETTING Engine : D2866LF03 1st speed rpm: 700 1st version kW : 273.0 Rack travel in mm : 15.00...15.10 : 2000 Rated speed Del.quantity cm3/: 24.2...24.4 TEST BENCH REQUIREMENTS 100 s: (23.9...24.7) Test oil inlet temp. °C : 38...42 cm3 : 0.5Spread Overflow valve 100 s: (0.9) : 1 417 413 025 2nd speed rpm : 300.0 Inlet press., bar: 1.50 Rack travel in mm: 4.7...5.1 Del.quantity cm3/: 1.7...2.3 Test nozzle holder 100 s: (1.4...2.6) assembly : 1 688 901 019 Spread cm3 : 0.8100 s: (1.2) Openina : 207...210 pressure, bar (B) Setting of injection pump with governor Orifice plate diameter mm GUIDE SLEEVE TRAVEL : 0,8 1st speed rpm : 1045 : 9.90...10.10 travel mm Test lines : 1 680 750 067 2nd speed rpm : 300travel mm : 1.50...1.70 Outside diameter 3rd speed : 500 rpm x Wall thickness travel mm : 3.30...3.90 : 800 x Length mm : 6.00X1.50X1000 4th speed rpm : 6.80...7.20 travel mm (A) Injection pump setting values rpm : 1300 5th speed Insp. values in parentheses : 13.00...14.00 travel mm Set equal delivery quant. per values GUIDE SLEEVE POSITION Control-lever position BEGINNING OF DELIVERY Degree: -1 rpm : 1060

Rack travel in mm : 15.20...17.80

Test pressure, bar: 30...32

2nd pressure hPa : 110 Rack travel in m: 12.00...12.10 3rd pressure hPa : 470 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Rack travel in m: 14.00...14.40 Speed rpm : 700 Aneroid pressure h: 1200 START CUT-OUT Del.quantity : 242.0...244.0 1000 : (239.0...247.0) Speed 1/min: 220 (240) Spread cm3 : 5.00 1000 : (9.00)FUEL DELIVERY CHARACTERISTICS RATED SPEED 1st version 1st version Aneroid pressure h: 1200 Control Lever rpm : 1000 Speed Del.quantity cm3/: 236.0...242.0 position degrees: 298...306 1000 s: (233.0...245.0) Testina: Aneroid pressure h: -Speed rpm: 700 Del.quantity cm3/: 95.0...101.0 1000 s: (92.0...104.0) 1st rack travel in: 13.60 rpm : 1040...1050 Speed 2nd rack travel in: 4.00 rpm : 1125...1155 Speed Aneroid pressure h: -4th rack travel in: 1300 Speed rpm : 500 Del.quantity cm3/: 134.0...136.0 Speed rom : 0.00...1.001000 s: (131.0...139.0) LOW IDLE 1 Control lever position degrees: 256...264 BREAKAWAY Testina: 1st version Speed : 200 1mm rack travel less than rpm Minimum rack trave: 6.40 rpm : 300 full load rack tr: 13.60 Rack travel in mm : 4.80...5.00 rpm : 1040...1050 Speed CONSTANT REGULATION INTERMEDIATE RATED SPEED rpm : 290...400 Speed Rack travel in mm: 4.00 TORQUE "INTROL STARTING FUEL DELIVERY mtrol curve - 1st version Torque 1st speed rpm : 700 Speed rpm : 100 Del.quantity cm3/: 210.0...230.0 1000 s: (206.0...234.0) Rack travel in m: 15.00...15.10 2nd speed rpm : 1000 Rack travel in m: 14.60...14.70 Aneroid/Altitude LOW IDLE Compensator Test rpm : 300 Rack travel in mm : 4.70...5.10 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) 1st version Setting Speed : 500 cm3 : 8.00 rom Spread hPa : 1200 Pressure 1000 s: (12.00) Rack travel mm : 15.00...15.10 Remarks: Measurement : MAN-NR, 0-7051 1/min: 500 Speed Setting and blocking of pointer of 1st pressure hPa : start-of-delivery sensor on cyl. 6 Rack travel in m: 11.70...11.90 start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet Edition : MAN 11,9 u6 : 27.02.91 Replaces : 14.12.90 Test oil : ISO-4113 Combination no. : 0 402 036 744 Injection pump Pump designation : PES6P120A720/3LS3255 EP type number : 0 412 026 739 Governor Governor design. : RQV300...1000PA876-12 : 0 421 813 897 Governer no. Customer-spec. information Customer : MAN : D2866LF05 Engine 1st version kW : 272.0 Rated speed : 2000 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly Opening : 207...210 pressure, bar Orifice plate diameter mm : 0,8 Test Lines : 1 **680** 750 067 Outside diameter x Wall thickness : 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80 : (3.65...3.85) Rack travel in mm : 14.50...15.50 Firing order : 6-2-4-1-5-3 Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 6 BEGINNING OF DELIVERY DIFFERENCE betw. rack trav. m: 5.90...6.10 & maximum rack tra: 14.5...15.5 Difference ° CS : 2.00...4.00 BASIC SETTING 1st speed rpm: 700 Rack travel in mm : 15.10...15.20 Del.guantity cm3/: 24.4...24.6 100 s: (24.1...24.9) Spread cm3 : 0.5100 s: (0.9) rpm : 300.0 2nd speed Rack travel in mm : 4.8...5.2 Dec.quantity cm3/ : 1.7...2.3 100 s: (1.4...2.6) cm3 : 0.8Spread 100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 1045 1st speed : 9.70...9.90 travel mm 2nd speed rpm : 300 : 0.90...1.30 travel mm 3rd speed rpm : 550 : 3.70...4.30 travel mm rpm : 800 4th speed : 6.60...7.00 travel mm rpm : 1300 5th speed : 13.00...14.00 travel mm GUIDE SLEEVE POSITION

Control-lever position

Speed

Degree: -1 rpm : 1100

Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 700 Aneroid pressure h: 1200 Del.quantity : 244.0...249.0) : 5.00 : (9.00) 1000 RATED SPEED 1st version Control Lever position degrees: 298...306 Testing: 1st rack travel in: 14.10 rpm : 1040...1050 Speed 2nd rack travel in: 4.00 rpm : 1150...1180 Speed 4th rack travel in: 1300 Speed : 0.00...1.00 rom LOW IDLE 1 Control lever position degrees: 254...262 Testina: : 200 Speed rpm Minimum rack trave: 6.50 : 300 rpm Rack travel in mm : 4.90...5.10 CONSTANT REGULATION Speed rpm : 280...400 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : 1200 Pressure Rack travel mm : 15.10...15.20 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 11.70...11.90 2nd pressure hPa : 110 Rack travel in m: 12.00...12.10 3rd pressure hPa : 470 Rack travel in m: 13.60...14.00 START CUT-OUT

1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed rpm : 1000 Del.quantity cm3/ : 243.0...247.0 1000 s: (240.0...250.0) Aneroid pressure h: rpm : 700 Speed Del.quantity cm3/: 89.0...99.0 1000 s: (86.0...102.0) Spread cm3 : 10.001000 s: (-) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 14.10 Speed rpm : 1040...1050 INTERMEDIATE RATED SPEED Rack travel in mm: 4.00 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 220.0...240.0 1000 s: (216.0...244.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 4.80...5.20 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) Spread cm3: 8.00 1000 s: (12.00)

Remarks:

: MAN-NR. 3-7039

Setting and blocking of pointer of start-of-delivery sensor on cyl. 6 start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 4.30...4.40 : (4.25...4.45) Note remarks Rack travel in mm : 9.00...12.00 Test sheet : MB 11,7 a16 Firing order : 6-2-4-1-5-3 Edition : 18.02.91 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 036 745 Tolerance + - ° : 0.50 (0.75) Injection pump Pump designation : PES6P110A720/3LS3131 Time to cyl. no. : 6 : 0 412 016 734 EP type number BASIC SETTING Governor Governor design. : RQ300/1100PA722-1 1st speed rpm: 1100 Governer no. : 0 421 801 461 Rack travel in mm : 10.90...11.00 Customer-spec. information Customer : MERCEDES-BEN7 Del.quantity cm3/: 13.7...13.9 Engine : 0M447 100 s: (13.4...14.1) 1st version kW : 168.0 Spread cm3 : 0.4Rated speed : 2200 100 s: (0.8) TEST BENCH REQUIREMENTS 2nd speed rpm : 300.0 Rack travel in mm : 7.2...7.4 Test oil inlet temp. °C : 38...42 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3) Overflow valve Spread cm3 : 0.4: 1 417 413 025 100 s: (0.8) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Overflow Degree: -1 quantity min. 1/h: 100...120 Speed rpm : 600 Rack travel in mm : 12.50...13.50 Test nozzle holder assembly : 0 681 343 009 FULL LOAD DELIV. AT FULL LOAD STOP Opening. 1st version pressure, bar : 172...175 Speed rpm : 1100 Del.quantity : 137.0...139.0 1000 : (134.5...141.5) Test Lines : 1 680 750 015 : 4.00 Spread cm3 1000 : (8.00) Outside diameter x Wall thickness RATED SPEED : 6.00X1.50X600 x Length mm 1st version (A) Injection pump setting values Insp. values in parentheses Setting point: Set equal delivery quant. Speed rpm per values Rack travel in mm: 13.0 BEGINNING OF DELIVERY Testing: Test pressure, bar: 25...27 1st rack travel in: 9.90

Speed rpm : 1140...1155 2nd rack travel in: 4.00 rpm : 1185...1215 Speed 4th rack travel in: 1300 rpm : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm: 300 Rack travel in mm: 7.3 Testing: Speed rpm : 100 Minimum rack trave: 8.80 Speed rpm : 300
Rack travel in mm : 7.20...7.40
Rack travel in mm : 2.00
Speed rpm : 380...420 FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rpm Del.quantity cm3/: 113.0...117.0 1000 s: (110.0...120.0) Spread cm3 : 6.00 1000 s: (9.00) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.90 rpm : 1140...1155 Speed STARTING FUEL DELIVERY : 100 Sheed rpm Deliquantity cm3/: 130.0...150.0 1000 s: (126.0...154.0) Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS : 2.80...2.90 Prestroke mm : (2.75...2.95) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Note remarks : RVI 9,8 a 6 : 18.02.91 Test sheet Edition Replaces : 2.1.90 : ISO-4113 Test oil Phasing : 0-60-120-180-240-300 Combination no. : 0 402 046 313 Tolerance + - ° : 0.50 (0.75)Injection pump BASIC SETTING Pump designation : PES6P120A320RS419 EP type number : 0 412 026 037 1st speed rpm : 1050Governor Governor design. : RQV275...1050PA495-8 Rack travel in mm : 10.30...10.40 : D 421 813 482 Governer no. Del.quantity cm3/: 16.1...16.3 Customer-spec. information Customer : RVI 100 s: (15.8...16.6) Engine : MIDS062045 cm3 : 0.5Spread 1st version kW : 169.0 100 s: (0.9) Rated speed : 2100 rpm : 275.0 2nd speed Rack travel in mm : 5.2...5.4 Del.quantity cm3/ : 2.6...3.0 TEST BENCH REQUIREMENTS 100 s: (2.3...3.3) Test oil cm3 : 0.8 100 s: (1.2) inlet temp. °C : 38...42 Spread Overflow valve : 1 417 413 025 (B) Setting of injection pump with governor Inlet press., bar: 1.50 GUIDE SLEEVE TRAVEL Test nozzle holder 1st speed rpm : 250 : 1 688 901 101 assembly : 1.00...1.20 travel mm rpm : 450 2nd speed : 3.30...3.80 Opening | travel mm : 207...210 3rd speed pressure, bar rpm : 5.70...6.00 travel mm rpm : 1050 Orifice plate 4th speed diameter mm : 0,6 : 7.60...7.80 travel mm GUIDE SLEEVE POSITION Test lines : 1 680 750 015 Control-lever position Degree: -1 rpm : 1130 Outside diameter Speed x Wall thickness Rack travel in mm : 15.20...17.80 : 6.00X1.50X600 x Length mm FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version Speed rpm : 1050 Aneroid pressure h: 700 Set equal delivery quant. per values : 161.0...163.0 Del.quantity

1000 : (158.0...166.0)

: 5.00

1000 : (9.00)

cm3

Spread

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

RATED SPEED

1st version

Control lever

position degrees: 62...70

Testing:

1st rack travel in: 9.30

Speed rpm : 1125...1135 2nd rack travel in: 4.00

Speed rpm : 1200...1230

4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 8...16

Testing:

Speed : 200 rpm Minimum rack trave: 6.60

rpm : 275

Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

rpm : 275...390 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm hPa : 700 Pressure

Rack travel mm : 10.30...10.40

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.10...8.50 2nd pressure hPa : 360

Rack travel in m: 9.80...9.90

3rd pressure hPa : 160

Rack travel in m: 8.60...8.90

START CUT-OUT

1/min: 195 (215) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650

Del.quantity cm3/: 153.0...159.0

1000 s: (150.0...162.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/: 109.0...111.0 1000 s: (106.0...114.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30

Speed rpm : 1125...1135

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 160.0...180.0 1000 s: (156.0...184.0)

LOW IDLE

Speed rpm

Rack travel in mm : 5.20...5.40 Del.quantity cm3/: 26.0...30.0 1000 s: (23.0...33.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

Start-of-delivery mark 9.5° cam angle

after start of delivery cyl. 1

APPLICATION

Omnibus

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BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : RVI 9,8 k 1 : 01.02.91 Test sheet Edition : 14.12.90 Replaces Test oil : ISO-4113 Combination no. : 0 402 046 342 Injection pump Pump designation : PES6P120A320RS525-1 EP type number : 0 412 026 059 Governor Governor design. : RQV275...1100PA984 : 0 421 813 904 Governer no. Customer-spec. information Customer : RVI : MIDR 06 20 45 Engine 1st version kW : 202.0 Rated speed : 2200 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly Opening. pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test lines : 1 680 750 067 Outside diameter x Wall thickness x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1100 Rack travel in mm : 10.60...10.70 Del.quantity cm3/: 16.7...16.9 100 s: (16.4...17.2) cm3 : 0.5Spread 100 s: (0.9) 2nd speed rpm : 275.0
Rack travel in mm : 5.3...5.7
Del.quantity cm3/ : 1.5...2.1 100 s: (1.2...2.4) cm3 : 0.8Spread 100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 1145 : 8.40...8.60 travel mm 2nd speed rpm : 275 : 0.80...1.20 travel mm rpm : 500 3rd speed : 3.50...4.10 travel mm rpm : 850 4th speed : 5.90...6.30 travel mm rpm : 1450 5th speed travel mm : 11.00...12.00 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1125 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version

rpm : 1100

Aneroid pressure h: 700

Speed

: 167.0...169.0 Del.quantity 1000 : (164.0...172.0) : 5.00 Spread cm31000 : (9.00)RATED SPEED

1st version Control Lever position degrees: 298...306

Testing: 1st rack travel in: 9.60 Speed rpm : 1170...1180 2nd rack travel in: 4.00 Speed rpm : 1245...1275 4th rack travel in: 1400

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever position degrees: 242...250

Testing: : 200 Speed rpm Minimum rack trave: 7.20 Speed rpm : 275

Rack travel in mm : 5.40...5.60

CONSTANT REGULATION rpm : 320...440 Speed

Aneroid/Altitude Compensator Test

1st version Setting Speed : 500 rpm Pressure hPa : 700

Rack travel mm : 10.60...10.70

Measurement 1/mir: 500 Speed

1st pressure hPa : -Rack travel in m: 9.10...9.30 2nd pressure hPa : 220 Rack travel in m: 10.00...10.10 3rd pressure hPa : 195 Rack travel in m: 9.40...9.70

START CUT-OUT

Speed 1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700 Del.quantity cm3/ : 156.0...162.0 1000 s: (153.0...165.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 102.0...104.0

1000 s: (99.0...107.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.60 Speed rpm : 1170...1180

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 120.0...150.0 1000 s: (120.0...150.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.30...5.70 Del.quantity cm3/: 15.0...21.0 1000 s: (12.0...24.0)

cm3 : 8.00 Spread 1000 s: (12.00)

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

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BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : FIA 7,7 b Edition : 01.03.91 Replaces Test oil : ISO-4113 Combination no. : 0 402 046 343 Injection pump Pump designation : PES6P120A720RS3275 EP type number : 0 412 026 745 Governor Governor design. : RQV300...1100PA954-1 : 0 421 815 273 Governer no. Customer-spec. information Customer : IVECO-FIAT Engine : 8360.46.016 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 105 Openina pressure, bar : 207...210 Orifice plate diameter mm : 0,6 Test Lines : 1 680 750 008 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600

x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ______

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60 : (3.45...3.65)

Rack travel in mm : 9.00...12.00 Firing order : 1-5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 13.10...13.20

Del.quantity cm3/: 21.8...22.0

100 s: (21.5...22.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.0...5.4 Del.quantity cm3/ : 2.0...2.6 100 s: (1.7...2.9)

Spread cm3 : 0.8 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1160 travel mm : 10.60...10.80

2nd speed rpm : 300 travel mm : 1.00...1.40

3rd speed rpm : 850 travel mm : 6.60...7.00

4th speed rpm : 1350

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 900 Aneroid pressure h: 1500

Del.quantity : 218.0...220.0 1000 : (215.0...223.0)

Spread cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 116...124

Testina:

1st rack travel in: 11.70

rpm : 1140...1150 Speed 2nd rack travel in: 4.00

rpm : 1215...1245 Speed

4th rack travel in: 1400

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 68...76

Testina:

: 100 Speed rpm Minimum rack trave: 6.30

rpm : 275 Speed Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

rpm : 340...450 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 900

Rack travel in m: 13.10...13.20

2nd speau rpm : 1100

Rack travel in m: 12.70...12.90

3rd speed rpm : 750

Rack travel in m: 12.40...12.60

4th speed rpm : 400 Rack travel in m: 10.20...10.50

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 900 Pressure hPa : 1500

Rack travel mm : 13.10...13.20

Measurement

1/min: 900 Speed

1st pressure hPa : -

Rack travel in m: 8.70...8.90

2nd pressure hPa : 600

Rack travel in m: 12.00...12.10

3rd pressure hPa : 420

Rack travel in m: 9.70...10.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500

: 1100 Speed rpm

Del.quantity cm3/: 202.0...206.0

1000 s: (199.0...209.0)

Aneroid pressure h: 1500

: 750 Speed rpm

Del.quantity cm3/: 202.0...208.0 1000 s: (199.0...211.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 102.0...104.0

1000 s: (99.0...107.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 85.0...115.0

1000 s: (81.0...119.0)

LOW IDLE

Speed rpm: 300
Rack travel in mm: 5.00...5.40
Del.quantity cm3/: 20.0...26.0

1000 s: (17.0...29.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : RVI 12,0 f1 Edition : 27.02.91 : 5.11.90 Replaces : ISO-4113 Test oil Combination no. : 0 402 046 758 Injection pump Pump designation : PESSP120A320RS3139 EP type number : 0 412 026 718 Governor Governor design. : RQV275...950PA728-1 Governer no. : 0 421 813 465 Customer-spec, information Customer : RVI Engine : MIDR 063540 1st version kW : 243.0 : 1900 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 101 assembly Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,6 Test Lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 3.50...3.60 Prestroke mm : (3.45...3.65) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm: 600 Rack travel in mm : 12.50...12.60 Del.quantity cm3/: 19.7...19.9 100 s: (19.4...20.2) cm3 : 0.5Spread 100 s: (0.9) 2nd speed rpm : 275.0
Rack travel in mm : 5.20...5.60
Del.quantity cm3/: 2.2...2.6 100 s: (1.9...2.9) Spread cm3 : 0.8100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 275 : 1.30...1.70 rpm : 450 : 3.30...3.70 travel mm 2nd speed travel mm 3rd speed rpm : 800 travel mm : 5.60...6.00 4th speed : 950 rom travel mm : 6.70...6.90 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1125 Speed Rack travel in mm: 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rom : 600 Aneroid pressure h: 1000 Del.quantity : 197.0...199.0 1000 : (194.0...202.0)

: 5.00

: (9.00)

cm3 1000

Spread

RATED SPEED

1st version

Control lever

position degrees: 59...67

Testing:

1st rack travel in: 11.50

Speed rpm: 1020...1030 2nd rack travel in: 4.00

rpm : 1155...1185

4th rack travel in: 1250

Speed rom : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 8...16

Testina:

Speed rpm : 200 Minimum rack trave: 7.10

rpm : 275 Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

rpm : 300...400 Speed

Aneroid/Altitude

Compensator Test

1st version

Setting

: 500 Speed rpm

hPa : 1000 Pressure

Rack travel mm : 12.50...12.60

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.80...9.20

2nd pressure hPa : 520

Rack travel in m: 11.80...11.90 3rd pressure hPa : 200

Rack travel in m: 10.10...10.40

START CUT-OUT

Speed 1/min: 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 950

Del.quantity cm3/: 198.0...204.0

1000 s: (195.0...207.0)

Ameroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 112.0...114.0

1000 s: (109.0...117.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

Speed rpm : 1020...1030

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 155.0...185.0 1000 s: (151.0...189.0)

LOW IDLE

rpm : 275 Speed

Rack travel in mm : 5.20...5.60 Del.quantity cm3/: 22.0...26.0 1000 s: (19.0...29.0) Spread cm3 : 8.00 1000 s: (12.00)

Remarks:

Start-of-delivery mark 9° cam angle

after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: RVI 9,8 e : 18.02.91 Test sheet Edition : 4.5.90 Replaces : ISO-4113 Test oil

Combination no. : 0 402 046 784

Injection pump

Pump designation : PES6P120A320RS3139

EP type number : 0 412 026 718

Governor

Governor design. : RQV275...1000PA728-2

: 0 421 813 599 Governer no.

Customer-spec, information Customer : RVI

: MIDR 062045 E Engine

: 236.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,6 diameter mm

: 1 680 750 008 Test lines

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60

: (3.45...3.65) Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm : 10001st speed

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 16.0...16.2

100 s: (15.7...16.5)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 275.0 2nd speed Rack travel in mm : 5.2...5.6 Del.quantity cm3/ : 3.2...3.6 100 s: (2.9...5.9)

cm3 : 0.8 100 s: (1.2) Spread

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 0.90...1.10 travel mm rpm : 450 2nd speed

: 3.30...3.70 travel mm

: 800 3rd speed rpm : 5.60...6.00 travel mm

rpm : 1000 4th speed

travel mm : 7.00...7.20

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1170 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed Aneroid pressure h: 1000

Del.quantity : 100.0...165.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 59...67

Testing:

1st rack travel in: 10.20

rpm : 1065...1075 Speed

2nd rack travel in: 4.00

Speed rpm: 1180...1210 4th rack travel in: 1300

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 8...16

Testing:

Speed rpm : 20

Minimum rack trave: 7.20

Speed rpm : 275 Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

rpm : 230...320 Speed

Aneroid/Altitude

Compensator Test

1st version

Setting

Speea rpm : 500

hPa : 1000 Pressure Rack travel mm : 11.20...11.30

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.10...8.50

2nd pressure hPa : 320

Rack travel in m: 10.50...10.60

3rd pressure hPa : 160

Rack travel in m: 9.10...9.30

START CUT-OUT

Speed 1/min: 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 600

Del.quantity cm3/: 182.5...188.5 1000 s: (179.5...191.5)

BREAKAWAY

Aneroid pressure h: -

1st version 1mm rack travel less than

full load rack tr: 10.20 Speed rpm : 1065...1075 Speed

Speed rpm : 500 Del.quantity cm3/: 111.0...113.0 1000 s: (108.0...116.0)

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 155.0...185.0 1000 s: (151.0...189.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.20...5.60 Del.quantity cm3/: 32.0...36.0

1000 s: (29.0...39.0)

Spread cm3 : 8.001000 s: (12.00)

Remarks:

Start-of-delivery mark 9° cam angle after start of delivery cyl. 1.

B01

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 12,0 f2 Edition : 18.02.91 Replaces : 22.11.90 : ISO-4113 Test oil

Combination no. : 0 402 046 791

Injection pump

Pump designation: PES6P120A320RS3139 EP type number : 0 412 026 718

Governor

Governor design.: RQV275...950PA728-4

Governer no. : 0 421 813 678

Customer-spec. information Customer : RVI

Engine : MIDR 063540 H

1st version kW : 264.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - *

BASIC SETTING

1st speed rpm: 600

Rack travel in mm: 13.30...13.40

Del.quantity cm3/: 21.2...21.4

100 s: (20.9...21.7)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 275.0 2nd speed Rack travel in mm : 5.6...6.0 Del.quantity cm3/ : 2.4...2.8

100 s: (2.1...3.1)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275

: 1.30...1.70 travel mm

2nd speed

rpm : 450 : 3.30...3.70 travel mm

rpm : 800 3rd speed

travel mm : 5.60...6.00

rpm : 950 4th speed

: 6.70...6.90 travel mm

5th speed rpm : 1500

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1125

Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 1000

Del.quantity : 212.0...217.0)

Spread cm3

cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 59...67

Testing:

1st rack travel in: 12.30 Speed rpm : 1015...1025

2nd rack travel in: 4.00

rpm : 1160...1190 Speed

4th rack travel in: 1250

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 9...17

Testing:

Speed rpm : 200 Minimum rack trave: 7.60 Speed rpm : 275

Rack travel in mm : 5.70...5.90

CONSTANT REGULATION

rpm : 295...400 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 500 hPa : 1000 Speed **m** Pressure

Rack travel mm : 13.30...13.40

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.90...9.30

2nd pressure hPa : 660

Rack travel in m: 12.60...12.70
3rd pressure hPa : 200
Rack travel in m: 10.20...10.40

START CUT-OUT

Speed 1/min: 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 Speed rpm : 950

Aneroid pressure h: -Speed rpm : 500
Del.quantity cm3/ : 112.0...114.0
1000 s: (109.0...117.0)

1000 s: (207.0...219.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.30

Speed rpm : 1015...1025

Del.quantity cm3/: 210.0...216.0

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 150.0...180.0

1000 s: (146.0...184.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.60...6.00
Del.quantity cm3/ : 24.0...28.0
1000 s: (21.0...31.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

Start-of-delivery mark 9° cam angle after start of delivery cyl. 1.

B03

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: UNI 9,5 h Test sheet Edition : 01.03.91

Replaces

Test oil : ISO-4113

Combination no. : 0 402 046 821

Injection pump

Pump designation: PES6P120A720RS3273 EP type number : 0 412 026 746

Governor

Governor design. : RQV450...1100PA989

Governer no. : 0 421 813 918

Customer-spec. information Customer : IVECO-UNIC

: 8465.21.004 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 9.30...9.40

Del.quantity cm3/: 15.5...15.7

100 s: (15.2...16.0)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 450.0 2nd speed Rack travel in mm: 3.9...4.3 Del.quantity cm3/: 2.0...2.6

100 s: (1.7...2.9)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1145

travel mm : 7.90...8.10

2nd speed rpm : 450

: 0.70...1.10 travel mm

3rd speed 650 rpm :

: 3.90...4.50 travel mm

rpm : 950 4th speed

: 6.60...7.00 travel mm

rpm : 1500 5th speed

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1180 Speed

Rack travel in mm: 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

: 155.0...157.0

Del.quantity 1000 : (152.0...160.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

BO4

1st version Control Lever

position degrees: 114...122

Testing:

1st rack travel in: 8.30

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

Speed rpm : 1265...1295 4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 64...72

Testing:

Speed rpm : 100 Minimum rack trave: 5.60

rpm : 450

Rack travel in mm : 4.00...4.20

CONSTANT REGULATION

rpm : 450...580 Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.30

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...170.0 1000 s: (136.0...174.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Note remarks : DEE 10,1 g2 : 18.02.91 Test sheet Edition : 7.1.91 Replaces Test oil : ISO-4113 Combination no. : 0 402 076 739 Injection pump Pump designation : PES6P110A720RS3217 : 0 412 016 724 EP type number Governor Governor design. : RSV400...1050P2A549 Governer no. : 0 421 833 350 Customer-spec. information Customer : JOHN DEERE : 6101 HPWD1 Engine 1st version kW : 230.0 : 2100 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 457 413 010 Inlet press., bar: 1.50 Test nozzle holder : 1 683 901 101 assembly **Opening** pressure, bar : 207...210 Orifice plate diameter mm : 0,6 Test lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00x3.00x600 (A) Injection pump setting values Insp. values in parentheses

: (3.30...3.50) Rack travel in mm : 10.50 : 1-5-3-6-2-4 Firing order : 0-60-120-180-240-300 Phasing Tolerance + - * : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm : 1050Rack travel in mm : 12.80...12.90 Del.quantity cm3/: 20.5...20.7 100 s: (20.3...20.9) cm3 : 0.4Spread 100 s: (0.6) rpm : 400.02nd speed Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 2.0...2.4 100 s: (1.7...2.6) cm3 : 0.6Spread 100 s: (0.8) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpn: : 800 Speed Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : 4.50FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1050 Speed Aneroid pressure h: 1200 : 205.5...207.5 Del.quantity 1000 : (203.5...209.5) : 4.00 Spread cm3 1000 : (6.50) RATED SPEED 1st version Control lever position degrees: 38...46 Testing:

: 3.35...3.45

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

1st rack travel in: 11.80

Speed rpm : 1095...1105

2nd rack travel in: 4.00

rpm : 1165...1175 Speed

3rd rack travel in: 4.00

rpm : 1165...1195 Speed

4th rack travel in: 1300

rom : 0.30...1.40 Speed

LOW IDLE 1

Control lever

position degrees: 15...23

Setting point w/out bumper spring

: 400 rpm Rack travel in mm: 5.3

Testina:

Speed : 100 rpm Minimum rack trave: 19.00

rpm : 400 Rack travel in mm : 5.70...5.90

TORQUE CONTROL

Torque control curve - 1st version

1st speed nom : 1050

Rack travel in m: 12.80...12.90

2nd speed rpm : 700

Rack travel in m: 13.70...13.90

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500 Pressure hPa : 1200

: 13.70...13.90 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 11.00...11.20 2nd pressure hPa : 385 Rack travel in m: 11.80...11.90

3rd pressure hPa : 640

Rack travel in m: 12.80...13.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 700 Del.quantity cm3/ : 212.5...216.5 1000 s: (210.5...218.5)

Aneroid pressure h: -

: 500 Speed COM

Del.quantity cm3/: 156.0...160.0 1000 s: (154.0...162.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80

rpm : 1095...1105 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 160.0...180.0 1000 s: (155.0...185.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed : 400 rpm

Rack travel in mm : 5.70...5.90 Del.quantity cm3/: 20.0...24.0

1000 s: (17.5...26.5)

Spread cm3 : 6.00

1000 s: (8.00)

Remarks:

: JOHN DEERE # RE47354

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mink or blockage = 8.5° cam rotation angle after start of delivery for cylinder 1.

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: MB 21,9 v 3 : 25.01.91 : 17.10.90 Test sheet Edition Replaces Test oil : ISO-4113

Combination no. : 0 402 640 807A

Injection pump

Pump designation: PE12P120A320LS7806 : 0 412 620 805 EP type number

Governor

Governor design. : RQV400...1065PA835-2

Governer no. : 0 421 813 603

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 444 A

1st version kW : 380.0 : 2130 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm 8.0:

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm: : 4.00...4.10 : (3.95...4.15) Rack travel in mm: 9.00...12.00 Firing order: : 12-1-5-9-8-3-

4- 11- 10- 2- 6- 7

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

345

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm: 600

Rack travel in mm: 13.70...13.90

Del.quantity cm3/: 19.7...20.0

100 s: (19.4...20.3)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 400.02nd speed

Rack travel in mm: 5.4...5.6 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.8Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

travel mm : 1.00...1.20

2nd speed 500 rpm :

: 3.10...3.30 travel mm

rpm : 1100 3rd speed

: 7.30...7.70 rpm : 1225 travel mm

4th speed

travel mm : 8.30...8.70

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1180 Speed Rack travel in mm: 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version 1st pressure hPa : 350 Rack travel in m: 11.30...11.50 Speed rpm : 600 Aneroid pressure h: 700 2nd pressure hPa : 500 Del.quantity : 197.0...203.0) Rack travel in m: 12.60...12.80 3rd pressure hPa : 950 : 5.00 Rack travel in m: 15.10...15.20 1000 : (9.00) 4th pressure hPa : 1100 Rack travel in m: 14.20...14.40 RATED SPEED 5th pressure hPa : -Rack travel in m: 10.90...11.10 1st version Control lever START CUT-OUT position degrees: 112...120 1/min : 270 (290) Speed Testing: 1st rack travel in: 11.70 FUEL DELIVERY CHARACTERISTICS rpm : 1105...1115 Speed 2nd rack travel in: 4.00 Speed rpm : 1210...1240 4th rack travel in: 1300 1st version Aneroid pressure h: 1100 Speed rpm : 0.00...1.00Speed rpm : 1065 Del.quantity cm3/: 184.0...188.0 LOW IDLE 1 1000 s: (181.0...191.0) Control lever cm3 : 8.00Spread position degrees: 62...70 1000 s: (12.0) Aneroid pressure h: 1100 Speed rpm : 800 Del.quantity cm3/ : 212.0...216.0 1000 s: (209.0...219.0) Testing: Speed rpm : 100 Minimum rack trave: 6.10 cm3 : 8.00rpm : 400 Spread Rack travel in mm : 4.40...4.60 1000 s: (12.0) Aneroid pressure h: 1100 CONSTANT REGULATION Speed : 1065 rpm rpm : 400...600 Del.quantity cm3/: 174.0...177.0 Speed 1000 s: (171.0...180.0) TORQUE CONTROL cm3 : 8.00 Spread Dimension a mm : 0.60 1000 s: (12.0) Torque control curve - 1st version Aneroid pressure h: -1st speed rpm : 1065 Speed rpm : 500 Del.quantity cm3/: 125.0...127.0 Rack travel in m: 12.70...12.90 2nd speed : 975 1000 s: (122.0...130.0) COM Rack travel in m: 13.30...13.50 Spread cm3 : 8.003rd speed rpm : 900 1000 s: (12.0) Rack travel in m: 13.90...14.10 4th speed rpm : 800 Rack travel in m: 14.30...14.50 BREAKAWAY Aneroid/Altitude 1st version Compensator Test 1mm rack travel less than full load rack tr: 11.70 1st version Speed rpm : 1105...1115 Setting : 600 Speed ngn STARTING FUEL DELIVERY Pressure hPa : 700 Rack travel mm : 13.70...13.90 : 100 Speed rpm Measurement Del.quantity cm3/: 190.0...210.0 1/min: 600 Speed 10CC s: (186.0...214.0)

Remarks:

APPLICATION

Rail car

Note remarks

Test sheet : MB 22,0 e 2 : 18.01.91 Edition Replaces : 17,10,90 Test oil : ISO-4113

Combination no. : 0 402 640 822

Injection pump

Pump designation: PE12P120A320LS7814-2

EP type number : 0 412 620 824

Governor

Governor design. : RQ900PA966-1 Governer no. : 0 421 801 550

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 539.0 : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

: 1 688 901 019 assembly

Openina .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.80...4.90 : (4.75...4.95) Prestroke mm

Rack travel in mm : 19.00...21.00 Firing order : 12-1-5-9-8-3-4-11-10-2-6-7

Phasing

: 0-45-60-105-120-165-

180-225-240-285-300-

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 14.50...14.60

Del.quantity cm3/: 29.4...29.6

100 s: (29.1...29.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.4...5.7 Del.quantity cm3/ : 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6

Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 935 1st speed

: 4.60...5.10 travel mm

rpm : 1070 2nd speed

travel mm : 13.70...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Del.quantity : 294.0...296.0

1000 : (291.0...299.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 13.50 Speed rpm : 905...910 2nd rack travel in: 4.00

Speed rpm : 940...950 4th rack travel in: 1000

Speed rpm : 0.00...1.00

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.50 Speed rpm : 905...910

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 270.0...290.0 1000 s: (266.0...294.0)

Remarks:

Observe VDT-I-420/120

APPLICATION

Generator

Note remarks

Test sheet : MB 21,9 u 1 Edition : 18.01.91 Replaces : 17.9.90 Test oil : ISO-4113

Combination no. : 0 402 640 823

Injection pump

Pump designation : PE12P12OA320LS7805 EP type number : 0 412 620 802

Governor

Governor design. : RQV350...1050PA781-1

: 0 421 813 890 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: OM 444 LA Engine

: 485.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...160

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

: 0,8 diameter mm

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm : (5.15...5.35)

Rack travel in mm : 9.00...12.00

: 12- 1- 5- 9- 8- 3-4- 11- 10- 2- 6- 7 Firing order

Phasing : 0-45-60-105-120-165-180-225-240-285-300-

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 12

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 14.40...14.50

Del.quantity cm3/: 21.1...21.3

100 s: (20.8...21.6)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.4...6.0 Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 350 : 1.40...1.90 travel mm

rpm : 481 2nd speed

: 3.00...3.50 travel mm

rpm : 1107 3rd speed

: 7.40...7.90 travel mm

rpm : 1420 4th speed

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1180

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 1050 Aneroid pressure h: 1100 Del.quantity : 211.0...213.0 1000 : (208.0...216.0) : 5.00 Spread cm31000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 116...124 Testing: 1st rack travel in: 13.40 rpm : 1090...1110 Speed 2nd rack travel in: 4.00 Speed rpm : 1230...1260 4th rack travel in: 1300 rpm : 0.00...1.50Speed LOW IDLE 1 Control lever position degrees: 64...72 Testing: Speed rpm : 250 Minimum rack trave: 7.00 Speed rpm : 350 Rack travel in mm : 5.40...6.00 CONSTANT REGULATION Speed rpm : 400...600 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : -Pressure : 11.00...11.30 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 350 Rack travel in m: 11.70...11.90 2nd pressure hPa : 500 Rack travel in m: 13.00...13.30

1st version Aneroid pressure h: 1100 Speed ngn : 600 Del.quantity cm3/: 210.0...213.0 1000 s: (207.0...216.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: -Speed rpm: 500
Del.quantity cm3/: 141.0...143.0
1000 s: (138.0...146.0) cm3 : 8.00Spread 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.40 Speed rpm : 1090...1110 STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 210.0...230.0 1000 s: (206.0...234.0) TESTING & SETTING RACK TRAVEL SENSOR Supply voltage : 24.0 Remarks: **APPLICATION** Rail car

Speed

START CUT-OUT

1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 21,9 j 2 Edition : 18.02.91 Replaces Test oil : ISO-4113 Combination no. : 0 402 640 825 Injection pump Pump designation : PE12P12OA32OLS7813-2 EP type number : 0 412 620 826 Governor Governor design. : RQ900PA966-2 Governer no. : 0 421 801 571

Customer—spec. information Customer : MERCEDES—BENZ		
Engine : OM 444 LA		
1st version kW : 529.0 Rated speed : 1800		
TEST BENCH REQUIREMENTS		
Test oil inlet temp. °C : 3842		
Overflow valve : 1 417 413 025		
Inlet press., bar: 1.50		
Overflow quantity min. 1/h: 150170		
Test nozzle holder assembly : 1 688 901 019		
Opening : 207210		
Orifice plate diameter mm : 0,8		
Test lines : 1 680 750 067		
Outside diameter x Wall thickness x Length mm : 6.00X1.50X1000		
(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values		
B15		

BEGINNING OF DELIVERY Test pressure, bar: 2527			
Prestroke mm :		5.205.30	
Rack travel in mm Firing order		(5.155.35) 19.0021.00 12- 1- 5- 9- 8- 3- 4- 11- 10- 2- 6- 7	
Phasing :		0-45-60-105-120-165- 180-225-240-285-300-	
Tolerance + - ° :		345 0.50 (0.75)	
Time to cyl. r	no. :	12	
BASIC SETTING			
1st speed	rpm:	850	
Rack travel in	nmm:	14.5014.60	
Del.quantity (cm3/ :	28.028.2	
1	100 s:	(27.728.5)	
Spread o	: Em	0.5	
1	100 s:	(0.9)	
Spread c	n mm : cm3/ :	5.45.7 1.62.2 (1.32.5) 0.6	
(B) Setting of injection pump with governor			
travel mm 2nd speed r travel mm	rom :	880 1.401.80 940 5.505.90 1000 11.1011.50	
FULL LOAD DELIV. AT FULL LOAD STOP			
Del.quantity 10 Spread cm	000 : 13 :	850 280.0282.0 (277.0285.0) 5.00 (9.00)	

RATED SPEED

1st version Control lever position degrees: 86...94

Testing:

1st rack travel in: 13.50 Speed rpm: 905...910 2nd rack travel in: 4.00 Speed rpm: 940...950 4th rack travel in: 1000 Speed rpm: 0.00...1.00

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.50 Speed rpm : 905...910

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 270.0...290.0 1000 s: (266.0...294.0)

Remarks:

Observe VDT-I-420/120

APPLICATION

Generator

Note remarks

Test sheet : MB 21,9 i 3 Edition : 18.02.91

Replaces

Test oil : ISO-4113

: 0 402 640 826 Combination no.

Injection pump

Pump designation: PE12P12OA32OLS7813-2

: 0 412 620 826 EP type number

Governor

Governor design. : RQ750PA966-3 Governer no. : 0 421 801 572

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 441.0 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

: 1 688 901 019 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 19.00...21.00

: 12- 1- 5- 9- 8- 3-4- 11- 10- 2- 6- 7 Firing order

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 15.10...15.20

Del.quantity cm3/: 28.0...28.2

100 s: (27.7...28.5)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 5.4...5.7

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 740

: 3.00...3.40 travel mm

rpm : 780 2nd speed

travel mm : 6.40...6.80

3rd speed : 820 rpm

travel mm : 10.70...11.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 280.0...282.0

1000 : (277.0...285.0)

: 5.00 Spread cm3

: (9.00) 1000

RATED SPEED

1st version Control lever

position degrees: 86...94

Testing:

1st rack travel in: 14.10 Speed rpm: 755...760 2nd rack travel in: 4.00 Speed rpm: 780...790 4th rack travel in: 1000

rpm : 0.00...1.00 Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 14.10 Speed rpm : 755...760 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 270.0...290.0 1000 s: (266.0...294.0)

Remarks:

Observe VDT-I-420/120

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 5.20...5.30 : (5.15...5.35) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Note remarks : DAF 11,7 j : 18.02.91 Test sheet Edition Replaces : 7.1.91 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 : 0 402 646 893 Combination no. Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PE6P120A320RS7202 EP type number : 0 412 626 835 BASIC SETTING Governor Governor design. : RQ250/1000PA936 1st speed rpm: 850 : 0 421 801 507 Governer no. Rack travel in mm : 11.90...12.00 Customer-spec. information Customer : DAF Del.quantity cm3/: 20.8...21.0 Engine : WS 268 100 s: (20.5...21.3) 1st version kW : 268.0 Spread cm3 : 0.5Rated speed : 2000 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 250.0 Test oil Rack travel in mm: 4.9...5.3 inlet temp. °C : 38...42 Del.quantity cm3/: 2.1...2.7 100 s: (1.8...3.0) Overflow valve Spread cm3 : 0.8: 1 417 413 025 100 s: (1.2) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -1 : 1 688 901 105 rpm : 550 assembly Speed Rack travel in mm : 15.20...16.40 Opening pressure, bar : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate 1st version diameter mm : 0,8 rpm : 850 Speed Aneroid pressure h: 1000 : 208.5...210.5 Del.quantity Test lines : 1 680 750 015 1000 : (205.5...213.5) : 5.00 Spread cm3 Outside diameter 1000 : (9.00) x Wall thickness x Length mm : 6.00x1.50x600 RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Set equal delivery quant. Setting point: per values ____ rpm Rack travel in mm: 15.8 BEGINNING OF DELIVERY Test pressure, bar: 25...27 Testina:

1st rack travel in: 10.90

rpm : 1035...1050 2nd rack travel in: 4.00 rpm : 1130...1160 Speed 4th rack travel in: 1250 rpm : 0.00...1.40 Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 250 Rack travel in mm: 5.1 Testing: Speed rpm : 100 Minimum rack trave: 6.60 rpm : 250 Rack travel in mm : 5.00...5.20 Rack travel in mm : 2.00 Speed rpm : 310...350 TORQUE CONTROL Dimension a mm : --Torque control curve - 1st version 1st speed rpm : 850 Rack travel in m: 12.90...13.00 2nd speed rpm : 1000 Rack travel in m: 12.80...13.00 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rom Pressure hPa : 1000 Rack travel mm : 11.90...12.00 Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 9.40...9.60 2nd pressure hPa : 360 Rack travel in m: 11.10...11.20 3rd pressure hPa : 220 Rack travel in m: 10.10...10.30 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: -Speed rpm : 600 Del.quantity cm3/ : 145.5...147.5 1000 s: (142.5...150.5) **BREAKAWAY**

1mm rack travel less than

full load rack tr: 10.90 rpm : 1035...1050 Speed

LOW IDLE

rpm : 250 Speed

Rack travel in mm : 4.90...5.30 Del.quantity cm3/: 21.0...27.0

1000 s: (18.0...30.0)

Spread cm3 : 8.00 1000 s: (12.00)

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

B20

1st version

: 5.20...5.30 : (5.15...5.35) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm : 9.00...12.00 Note remarks Firing order : 1-5-3-6-2-4 Test sheet : DAF 11,7 k6 Edition : 18.02.91 Replaces : 3.8.90 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 646 894 Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PE6P120A320RS7194 EP type number : 0 412 626 834 BASIC SETTING Governor Governor design. : RQ250/1000PA936 1st speed rpm: 850 Governer no. : 0 421 801 507 Rack travel in mm : 13.70...13.80 Customer-spec. information Customer : DAF Del.quantity cm3/: 23.9...24.1 100 s: (23.6...24.4) Engine : WS 295 1st version kW : 295.0 cm3 : 0.5Spread Rated speed : 2000 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 250.0Test oil Rack travel in mm: 7.6...8.0 inlet temp. °C : 38...42 Del.quantity cm3/: 2.2...2.8 100 s: (1.9...3.1) Overflow valve cm3 : 0.8Spread : 1 417 413 025 100 s: (1.2) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -1 : 1 688 901 105 assembly Speed rpm : 550 Rack travel in mm: 15.20...16.40 Opening pressure, bar : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate 1st version diameter mm : 0,8 rpm : 850 Speed Aneroid pressure h: 1000 : 239.0...241.0 Del.quantity Test lines : 1 680 750 015 1000 : (236.0...244.0) : 5.00 Spread cm3 Outside diameter 1000 : (9.00) x Wall thickness x Length mm : 6.00x1.50x600 RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Set equal delivery quant. Setting point: per values Speed rpm Rack travel in mm: 15.8

Testing:

1st rack travel in: 12.70

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

rpm : 1035...1050 Speed 2nd rack travel in: 4.00

rpm : 1130...1160 Speed

4th rack travel in: 1250

Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250 Rack travel in mm: 6.7

Testing:

rpm : 100 Speed Minimum rack trave: 8.20 rpm : 250

Rack travel in mm : 6.60...6.80

Rack travel in mm : 2.00

Speed rom : 345...385

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 850

Rack travel in m: 14.70...14.80

2nd speed rpm : 1000

Rack travel in m: 14.60...14.80

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rom : 600 hPa : 1000 Pressure

Rack travel mm : 13.70...13.80

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 11.00...11.20

2nd pressure hPa : 460

Rack travel in m: 13.00...13.10
3rd pressure hPa : 310
Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm3/: 165.0...167.0

1000 s: (162.0...170.0)

BREAKAWAY

1st version

B22

1mm rack travel less than

full load rack tr: 12.70

Speed rpm : 1035...1050

LOW IDLE

Speed rpm : 250

Rack travel in mm : 6.60...6.80

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

Test sheet : MB 11,0 t 4 : 25.01.91 : 5.10.90 Edition Replaces Test oil : ISO-4113

Combination no. : 0 402 646 897

Injection pump

Pump designation : PE6P12OA32OLS78O8 EP type number : 0 412 626 816

Governor

Governor design. : RQ300/950PA762-10 : 0 421 801 511 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M441 LA

1st version kW : 249.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Over flow

quantity min. 1/h: 100...120

Test nozzie holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30 : (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.90...14.10

Del.guantity cm3/: 21.4...21.6

100 s: (21.1...21.9)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0Rack travel in mm: 5.7...6.0 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6

Spread 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 600

Speed Rack travel in mm: 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 900

Del.quantity : 214.0...216.0 1000 : (211.0...219.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 rpm Rack travel in mm : 20.0

Testing: 1st rack travel in: 13.80 Speed rpm : 990...1005 2nd rack travel in: 4.00 Spread rpm : 1065...1095 Speed 4th rack travel in: 1200 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring Spread Speed rpm : 300 Rack travel in mm : 5.8 Testing: **BREAKAWAY** Speed rpm : 200 Minimum rack trave: 7.70 1st version : 300 rpm Rack travel in mm : 5.70...6.00 Rack travel in mm : 2.00 : 380...420 Speed Speed rrom Aneroid/Altitude Compensator Test Speed 1st version Setting : 600 Speed rpm Pressure hPa : 900 Remarks: : 13.90...14.10 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 11.00...11.20 2nd pressure hPa : 550 Rack travel in m: 12.70...12.90 3rd pressure hPa : 1100 Rack travel in m: 14.10...14.20 4th pressure hPa : 1200 Rack travel in m: 14.50...14.70 5th pressure hPa : Rack travel in m: 9.50...9.80 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1350 Speed rpm : 950 Del.quantity cm3/ : 241.0...243.0 1000 s: (238.0...246.0) Spread cm3 : 8.00 1000 s: (12.0)

Aneroid pressure h: 1350 : 800 Speed rpm Del.quantity cm3/: 241.0...246.0 1000 s: (238.0...249.0) cm3 : 8.001000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 145.0...147.0 1000 s: (142.0...150.0) cm3 : 8.00 1000 s: (12.0)

1mm rack travel less than

full load rack tr: 13.80 rpm : 990...1005

STARTING FUEL DELIVERY

rbm : 100 Del.quantity cm3/: 205.0...225.0 1000 s: (201.0...229.0)

B24

Note remarks

Test sheet : MB 11,0 t 5 : 25.01.91 : 5.10.90 Edition Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 901

Injection pump

Pump designation : PE6P120A320LS7808 EP type number : 0 412 626 816

Governor

Governor design. : RQV300...950PA797-12

: 0 421 813 840 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : 0M441 LA

1st version kW : 249.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening.

pressure, bar : 207...210

Orifice plate

: 0,8 diameter mm

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.90...14.10

Del.quantity cm3/: 21.4...21.6

100 s: (21.1...21.9)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 5.7...6.0

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6 Spread 100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

1.10...1.40 travel mm

rpn: : 620 2nd speed

travel mm

: 5.00...5.40 rpm : 780 3rd speed

: 6.00...6.50 travel mm

rpm : 1010 4th speed

: 8.30...8.80 travel mm

rpm : 1100 5th speed

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1040 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 600Aneroid pressure h: 900 Del.quantity : 214.0...216.0 1000 : (211.0...219.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 117...125 Testina: 1st rack travel in: 13.80 Speed rpm : 990...1000 2nd rack travel in: 4.00 : 1065...1095 Speed rpm 4th rack travel in: 1200 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 80...88 Testina: Speed rpm Minimum rack trave: 7.70 Speed rpm : 300 Rack travel in mm : 5.70...6.00 CONSTANT REGULATION rpm : 300...500 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 mon Pressure hPa : 900 : 13.90...14.10 Rack travel mm Measurement Speed $1/\min : 600$ 1st pressure hPa : 300 Rack travel in m: 11.00...11.20 2nd pressure hPa : 550 Rack travel in m: 13.10...13.30 3rd pressure hPa : 1100 Rack travel in m: 14.10...14.20 4th pressure hPa : 1200 Rack travel in m: 14.50...14.70 5th pressure hPa : -Rack travel in m: 9.50...9.80 START CUT-OUT

1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1350 rpm_ : 950 Speed Del.quantity cm3/: 241.0...243.0 1000 s: (238.0...246.0) : 8.00 Spread cm3 1000 s: (12.0) Aneroid pressure h: 1350 Speed rpm : 800 Del.quantity cm3/: 241.0...246.0 1000 s: (238.0...249.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 145.0...147.0 1000 s: (142.0...150.0) Spread cm3 : 8.00 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.80 rpm : 990...1000 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 205.0...225.0 1000 s: (201.0...229.0)

remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : FIA 13,8 w Edition : 27.02.91 : 30.11.90 Replaces Test oil : ISO-4113 Combination no. : 0 402 646 902 Injection pump Pump designation : PE6P130A720RS7197 EP type number : 0 412 636 815 Governor Governor design. : RQV300...900PA946 : 0 421 813 845 Governer no. Customer-spec, information Customer : IVECO-UNIC Engine : 8210.42.151 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 105 assembly Openina pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test lines : 1 680 750 015 Outside diameter x Wall thickness : 6.00X1.50X600 x Length mm (A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values BEGINNING OF CELIVERY Test pressure, bar: 25...27 Prestroke mm : 5.00...5.10 : (4.95...5.15) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4 Phasina : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 900 Rack travel in mm : 13.50...13.60 Del.quantity cm3/: 25.5...25.8 100 s: (25.1...26.1) Spread cm3 : 0.6100 s: (1.0) 2nd speed rpm : 300.0 Rack travel in mm : 5.1...5.5 Del.quantity cm3/ : 1.9...2.5 100 s: (1.5...2.9) Spread cm3 : 1.0 100 s: (1.4) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 300 1st speed travel mm : 1.00...1.40 2nd speed : 450 rpm : 2.80...3.40 travel mm rpm : 700 3rd speed : 5.50...5.90 travel mm rpm : 900 4th speed : 7.70...7.90 travel mm rpm : 1200 5th speed travel mm : 11.00...12.00 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 970 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 900 Aneroid pressure h: 900 Del.quantity : 200.0...261.5)

cm3 : 6.00Spread 1000 : (10.00)

RATED SPEED

1st version Control Lever

position degrees: 120...128

Testing:

1st rack travel in: 12.50 rpm : 940...950 Speed 2nd rack travel in: 4.00

rom : 1020...1050 Speed

4th rack travel in: 1200

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 78...86

Testing:

rpm : 100 Speed Minimum rack trave: 6.80 rpm : 300

Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

rpm : 320...440 Speed

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rom hPa : 900 Pressure

: 13.50...13.60 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 11.00...11.20

2nd pressure hPa : 340

Rack travel in m: 12.90...13.00

3rd pressure hPa : 280

Rack travel in m: 11.50...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 rpm : 500

Del.quantity cm3/: 269.0...276.0

1000 s: (265.5...279.5)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 197.0...200.0 1000 s: (193.5...203.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.50 Speed rpm : 940...950

INTERMEDIATE RATED SPEED Rack travel in mm: 4.00

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 240.0...280.0 1000 s: (236.0...284.0)

LOW IDLE

rpm : 300 Speed

Rack travel in mm : 5.10...5.50 Del.quantity cm3/ : 19.0...25.0 1000 s: (15.0...29.0)

cm3 : 10.00 Spread

1000 s: (14.00)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

B28

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 11.0 t 7 Edition : 25.01.91 Replaces : 15,11,90 Test oil : ISO-4113 Combination no. : 0 402 646 908 Injection pump Pump designation: PE6P120A320LS7808 EP type number : 0 412 626 816 Governor Governor design. : RQ300/950PA932-3 Governer no. : 0 421 801 528 Customer-spec, information Customer : MERCEDES-BENZ Engine : 0M441 LA : 249.0 1st version kW : 1900 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzle holder : 1 688 901 019 assembly Openina pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test Lines : 1 680 750 067 Outside diameter

x Wall thickness : 6.00x1.50x1000 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ___ **CO1**

BEGINNING OF DELIVERY Test pressure, bar: 25...27 : 5.20...5.30 Prestroke mm : (5.15...5.35) Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1 Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 6 BASIC SETTING 1st speed rpm: 600 Rack travel in mm: 13.90...14.10 Del.quantity cm3/: 21.4...21.6 100 s: (21.1...21.9) Spread cm3 : 0.5100 s: (0.9) rpm : 300.02nd speed Rack travel in mm: 5.7...6.0 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5) cm3 : 0.6Spread 100 s: (1.0) GUIDE SLEEVE POSITION Control-lever position Degree: -2 rpm : 600 Speed Rack travel in mm: 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 600 Aneroid pressure h: 900 : 214.0...216.0 Del.quantity 1000 : (211.0...219.0) : 5.00 Spread an3 1000 : (9.00) RATED SPEED 1st version

Setting point:

rpm Rack travel in mm: 20.0

Speed

Testina: 1st rack travel in: 13.80 Speed rpm : 990...1005 2nd rack travel in: 4.00 : 1065...1095 Speed rom 4th rack travel in: 1200 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 5.8 Testing: Speed rpm : 200 Minimum rack trave: 7.70 Speed rpm : 300 Rack travel in mm : 5.70...6.00 Rack travel in mm: 2.00 Speed : 380...420 rpm Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 900 Pressure Rack travel mm : 13.90...14.10 Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 11.00...11.20 2nd pressure hPa : 550 Rack travel in m: 13.30...13.50 3rd pressure hPa : 1100 Rack travel in m: 14.10...14.20 4th pressure hPa : 1200 Rack travel in m: 14.50...14.70 5th pressure hPa : -Rack travel in m: 9.40...9.70 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1350 Speed : 950 rpm Del.quantity cm3/: 241.0...243.0 1000 s: (238.0...246.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1350 Speed rpm : 800 Del.quantity cm3/ : 241.0...246.0 1000 s: (238.0...249.0)

Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 145.0...147.0 1000 s: (142.0...150.0) Spread cm3 : 8.00 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.80 Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm: 100

Rack travel in mm : 13.00...13.50

Remarks:

Note remarks

Test sheet : DAF 11,7 L : 18.02.91 : 14.12.90 Edition Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 912

Injection pump

Pump designation: PE6P120A320RS7218 EP type number : 0 412 626 839

Governor

Governor design. : RQ250/1000PA936-1

: 0 421 801 508 Governer no.

Customer-spec. information Customer : DAF

: WS 268 Engine

1st version kW : 268.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm **8.0**:

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40

: (5.25...5.45)

Rack travel in mm : 14.50...15.50 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10 & maximum rack tra: 14.5...15.5 Difference * CS : 2.25...3.75

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 15.00...15.10

Del.quantity cm3/: 23.4...23.6

100 s: (23.1...23.9)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm: 6.6...7.0 Del.quantity cm3/: 2.8...3.4

100 s: (2.5...3.7)

Spread cm3 : 0.8100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 Speed rom : 550 Rack travel in mm : 15.80...17.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850 Aneroid pressure h: 1000

: 234.0...236.0 1000 : (231.0...239.0) Del.quantity

cm3 : 5.00 1000 : (9.00) Spread

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm: 16.4

Testing:

1st rack travel in: 14.00 Speed rpm : 1035...1050

2nd rack travel in: 4.00

Speed rpm : 1140...1170 4th rack travel in: 1250

Speed rom : 0.00...2.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250 Rack travel in mm: 5.0

Testing:

: 100 Speed rpm Minimum rack trave: 6.50 rpm : 250

Rack travel in mm : 4.90...5.10

Rack travel in mm : 2.00 : 310...350 Speed CON

TORQUE CONTROL

Dimension a mm :-

Torque control curve - 1st version

1st speed rpm : 850

Rack travel in m: 15.30...15.40

2nd speed rpm : 1000

Rack travel in m: 15.20...15.40

Aneroid/Altitude Compensator Test

1st version

Setting Speed

: 600 rom hPa : 1000 Pressure

Rack travel mm : 15.00...15.10

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 12.40...12.60

2nd pressure hPa : 480

Rack travel in m: 14.20...14.30

3rd pressure hPa : 330

Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: -

Speed nom : 600 Del.quantity cm3/: 96.0...106.0

1000 s: (92.0...110.0)

Aneroid pressure h: rpm : 600 Speed

Del.quantity cm3/: 164.0...166.0 1000 s: (161.0...169.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.00

Speed npr: : 1035...1050

LOW IDLE

Speed rpm : 250 Rack travel in mm : 4.90...5.10

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

: DAF 11,7 L1 : 18.02.91 Test sheet Edition : 14.12.90 Replaces Test oil : ISO-4113

Combination no. : 0 402 646 913

Injection pump

Pump designation: PE6P120A320RS7218 EP type number : 0 412 626 839

Governor

Governor design. : RQV250...1000PA939

: 0 421 813 829 Governer no.

Customer-spec. information Customer : DAF

Engine : WS 268

1st version kW : 268.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.30...5.40 : (5.25...5.45) Prestroke mm

Rack travel in mm : 14.50...15.50 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasina

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10 & marimum rack tra: 14.5...15.5 Difference * CS : 2.25...3.75

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 15.00...15.10

Del.quantity cm3/: 23.5...23.7

100 s: (23.2...24.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0 Rack travel in mm: 6.6...7.0

Del.quantity cm3/: 3.1...3.7

100 s: (2.8...4.0)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1045 1st speed

: 7.80...8.00 travel mm

2nd speed rpm : 250

travel mm : 0.70...1.10

3rd speed rpm : 400

2.50...3.10 travel mm

rpm : 700 4th speed

: 4.50...4.90 : 1350 travel mm

5th speed rpm

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1125 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850 Aneroid pressure h: 1000

Del.quantity : 235.0...237.0

1000 : (232.0...240.0)

: 5.00 cm3Spread

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 118...126

Testing:

1st rack travel in: 14.00

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

rpm : 1160...1190 Speed

4th rack travel in: 1250

rpm : 0.00...1.40 Speed

LOW IDLE 1

Control lever

position degrees: 78...86

Testing:

Speed rom : 100 Minimum rack trave: 6.50 (BC)

Rack travel in mm: 4.90...5.10

CONSTANT REGULATION

Speed : 270...380 rom

Aneroid/Altitude Compensator Test

1st version

Setting

: 600 Speed **rpm** Pressure hPa : 1000

Rack travel mm : 15.00...15.10

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 12.40...12.60

2nd pressure hPa : 480

Rack travel in m: 14.20...14.30

3rd pressure hPa : 330

Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -: 600 Speed rpm

Del.quantity cm3/: 99.0...109.0 1000 s: (95.0...113.0)

cm3 : 10.00 Spread

1000 s: (14.0)

Aneroid pressure h: -

Speed rpm : 600 Del.quantity cm3/ : 165.0...167.0 1000 s: (162.0...170.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 14.00

Speed rpm : 1040...1050

LOW IDLE

Speed rpm : 250

Rack travel in mm : 4.90...5.10

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

Test sheet : UNI 13,8 a Edition : 18.02.91 : 5.11.90 Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 914

Injection pump

Pump designation : PE6P130A720RS7197

EP type number : 0 412 636 815

Governor

Governor design. : RQ300/900PA968 Governer no. : 0 421 801 540

Customer-spec. information Customer : IVECO-UNIC

: 8210.42.153 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Toterance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASTC SETTING

1st speed rpm: 900

Rack travel in mm : 13.50...13.60

Del.quantity cm3/: 25.5...25.8

100 s: (25.1...26.1)

Spread cm3 : 0.6

100 s: (1.0)

rpm : 300.0 2nd speed Rack travel in mm: 5.2...5.6

Del.quantity cm3/: 1.9...2.5 100 s: (1.5...2.9)

cm3 : 1.0 Spread

100 s: (1.4)

GUIDE SLEEVE POSITION

Control-lever position Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed Aneroid pressure h: 900

Del.quantity : 255.0...258.0

1000 : (251.5...261.5)

: 6.00 Spread cm3

1000 : (10.00)

RATED SPEED

1st version

Setting point:

rpm Rack travel in mm: 20.0

Testing:

1st rack travel in: 12.50 rpm : 945...960 Speed

2nd rack travel in: 4.00

: 1070...1100 Speed rpm

CO7

4th rack travel in: 1250

Speed rom : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 5.4

Testing:

Speed rpm : 100

Minimum rack trave: 6.90 rpm : 300

Rack travel in mm : 5.30...5.50 Rack travel in mm : 2.00

: 380...420 Speed rom

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 900

Rack travel in m: 13.50...13.60

2nd speed rpm : 600

Rack travel in m: 13.50...13.70

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rom . hPa : 900 Pressure

: 13.50...13.60 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.70...10.90

2nd pressure hPa : 345

Rack travel in m: 12.70...12.80

3rd pressure hPa : 275

Rack travel in m: 11.10...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 500 Del.quantity cm3/ : 269.0...276.0

1000 s: (269.0...276.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 181.0...184.0 1000 s: (177.5...187.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50

Speed rpm : 945...960

STARTING FUEL DELIVERY

LOW IDLE

Speed rpm : 300 Rack travel in mm : 5.20...5.60 Del.quantity cm3/: 19.0...25.0 1000 s: (15.0...29.0)

cm3 : 10.00 1000 s: (14.00) Spread

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

APPLICATION

Omnibus

Note remarks

Test sheet : MB 9,6 r : 18.01.91 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 646 916

Injection pump

Pump designation : PE6P120A320LS7836 EP type number : 0 412 626 840

Governor

: RQV300...1050PA797-Governor design.

17

: 0 421 813 884 Governer no.

Customer spec. information

Customer : MERCEDES-BENZ

: 0M401 LA Engine

1st version kW : 200.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm : (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm: 12.30...12.50

Del.quantity cm3/: 17.4...17.6

100 s: (17.1...17.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.4...5.9 Del.quantity cm3/ : 1.6...2.2 100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed 300 rpm :

travel mm 1.00...1.50

2nd speed 600 rpm :

travel mm : 4.80...5.30

3rd speed 820 rom :

5.90...6.40 travel mm

rpm : 1107 4th speed

: 8.30...8.80 travel mm

rpm : 7183 5th speed

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1125 Speed

Rack travel in mm : 15.20...17.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 700

: 174.0...176.0 Del.quantity 1000 : (171.0...179.0)

cm3 : 5.00 1000 : (9.00) Spread

RATED SPEED

1st version Control lever

position degrees: 118...126

Testina:

1st rack travel in: 12.10

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

Speed rpm : 1165...1195 4th rack travel in: 1200

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 80...88

Testing:

Speed rpom : 200 Minimum rack trave: 7.60 rpm

Speed rpm : 300 Rack travel in mm : 5.40...5.90

CONSTANT REGULATION

: 300...500 Speed MC

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 600 rpm hPa : 800 Pressure

Rack travel mm : 12.30...12.50

Measurement

1/min: 600 Speed

1st pressure hPa : 300

Rack travel in m: 10.50...10.70 2nd pressure hPa : 400

Rack travel in m: 11.40...11.60

3rd pressure hPa : 900

Rack travel in m: 12.40...12..60*

4th pressure hPa : 1100

Rack travel in m: 12.80...13.00

5th pressure hPa : -

Rack travel in m: 10.10...10.30

START CUT-OUT

1/min: 240 (260) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600

: 1050 Speed rom

Del.quantity cm3/: 196.0...199.0 1000 s: (193.0...202.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 1600 : 800 Speed rpm

Del.quantity cm3/: 200.0...204.0 1000 s: (197.0...207.0)

cm3 : 8.00

1000 s: (12.0) Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 125.0...127.0

1000 s: (122.0...130.0)

cm3 : 8.00Spread

1000 s: (12.0)

BREAKAWAY

Spread

1st version

1mm rack travel less than

full load rack tr: 12.10

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 200.0...220.0

1000 s: (196.0...224.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

C10

Note remarks

Test sheet : MB 11,1 c Edition : 01.02.91

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 921

Injection pump

Pump designation : PE6P120A320LS7837 EP type number : 0 412 626 842

Governor

Governor design. : RQ300/1050PA972-3

: 0 421 801 565 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M441 LA

: 250.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35) Rack travel in mm : 20.00...21.00

: 6-3-5-2-4-1 Firing order

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.60...13.80

Del.quantity cm3/: 21.1...21.3

100 s: (20.8...21.6)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 5.7...6.0 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 800

Del.quantity : 211.0...213.0

1000 : (208.0...216.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm: 20.0

Testing: 1st rack travel in: 13.90 rpm : 1090...1105 Speed 2nd rack travel in: 4.00 rpm : 1145...1175 Speed 4th rack travel in: 1200 rom : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring : 300 rpm Rack travel in mm: 5.8 Testina: Speed rpm Minimum rack trave: 7.70 Speed rpm : 300
Rack travel in mm : 5.70...6.00
Rack travel in mm : 2.00 : 380...420 Speed rrom TORQUE CONTROL Dimension a mm rpm : 1050 2nd speed Rack travel in m: 14.90...15.10 3rd speed rpm : 800 Rack travel in m: 15.00...15.20 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed man hPa : 800 Pressure Rack travel mm : 13.60...13.80 Measurement 1/min: 600 Speed 1st pressure hPa : 200 Rack travel in m: 10.00...10.20 2nd pressure hPa : 500 Rack travel in m: 12.70...12.90 3rd pressure hPa : 1000 Rack travel in m: 13.90...14.10 4th pressure hPa : 1200 Rack travel in m: 14.50...14.70 5th pressure hPa : -Rack travel in m: 8.80...9.10 FUEL DELIVERY CHARACTERISTICS

Del.quantity cm3/: 242.0...245.0 1000 s: (239.0...248.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1500 Speed rpm : 800 Del.quantity cm3/ : 244.0...248.0 1000 s: (241.0...251.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 135.0...137.0 1000 s: (132.0...140.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 13.90 Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm: 100

Remarks:

•

Speed

1st version

Aneroid pressure h: 1500

rpm : 1050

Note remarks

Test sheet : UNI 13,8 h Edition : 01.03.91

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 923

Injection pump

Pump designation : PE6P130A720RS7225 EP type number : 0 412 636 817

Governor

Governor design. : RQV300...900PA946

Governer no. : 0 421 813 845

Customer-spec. information

Customer : IVECO-UNIC

Engine : 8210.42.061

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.15...5.25

: (5.10...5.30)

Rack travel in mm : 11.50...12.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 11.60...11.70

Del.quantity cm3/: 27.0...27.3

100 s: (26.6...27.6)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 300.0 Rack travel in mm : 3.4...3.8 Del.quantity cm3/ : 1.9...2.5

100 s: (1.5...2.9) Spread cm3 : 1.0

100 s: (1.4)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 945 1st speed

: 8.40...8.60 cravel mm : 300 : 1.00...1.40 2nd speed rom

travel mm

rpm : 500 3rd speed

: 3.30...3.90 travel mm

rpm : 700 4th speed

travel mm : 5.50...5.90

rpm : 1200 5th speed

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 935 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

Aneroid pressure h: 900

Del.quantity : 270.0...276.5)

C13

Spread cm3 : 6.00

1000 : (10.00)

RATED SPEED

1st version Control lever

position degrees: 72...80

Testing:

1st rack travel in: 10.60 Speed rpm: 940...950 2nd rack travel in: 4.00

rpm : 1010...1040 Speed

4th rack travel in: 1200

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control Lever

position degrees: 76...84

Testina:

Speed rom : 100 Minimum rack trave: 5.10

Speed rpm : 300 Rack travel in mm : 3.50...3.70

CONSTANT REGULATION

Speed nom : 320...440

Aneroid/Altitude Compensator Test

1st version Settina

Speed rpm : 500 Pressure hPa : 900

: 11.60...11.70 Rack travel mm

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 8.90...9.10

2nd pressure hPa : 350 Rack travel in m: 11.00...11.10

3rd pressure hPa : 285

Rack travel in m: 9.50...9.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm: 500 Del.quantity cm3/: 285.0...292.0 1000 s: (285.0...292.0)

Aneroid pressure h: -Speed rpm

Del.quantity cm3/: 175.0...185.0 1000 s: (171.0...189.0)

Spread cm3 : 10.001000 s: (14.0)

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/: 202.0...205.0
1000 s: (198.5...208.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.60 Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 300.0...330.0

1000 s: (296.0...334.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 3.40...3.80 Del.quantity cm3/ : 19.0...25.0 1000 s: (15.0...29.0)

cm3 : 10.00Spread

1000 s: (14.00)

Remarks:

Check electrically unlatched starting fuel delivery (FES) with 24 volt.

On activation of the starting solenoid,

the start position must be reached.

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

Test sheet : MB 11,1 b : 25.01.91 : 30.11.90 Edition Replaces : ISO-4113 Test oil

: 0 402 646 925 Combination no.

Injection pump

Pump designation : PE6P120A320LS7837 EP type number : 0 412 626 842

Governor

Governor design.: RQV300...950PA797-20

Governer no. : 0 421 813 893

Customer-spec. information

Customer : MERCEDES-BENZ

: OM441 LA Engine

: 252.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 14.30...14.50

Del.quantity cm3/: 22.7...22.9

100 s: (22.4...23.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.9...6.2 Del.quantity cm3/ : 1.6...2.2 100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.00...1.50

567 2nd speed rpm :

: 4.40...4.90 travel mm rpm : 780 3rd speed

: 6.10...6.60 travel mm

rpm : 1009 4th speed

travel mm : 8.30...8.80

rpm : 1190 5th speed

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1025 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm: 600 Aneroid pressure h: 1000 Del.quantity : 221.0...232.0) cm3 : 5.00 1000 : (9.00) START CUT-OUT RATED SPEED Speed 1st version Control Lever position degrees: 120...128 1st version Testing: 1st rack travel in: 14.10 Speed rpm : 990...1000 Speed 2nd rack travel in: 4.00 rpm : 1085...1115 Speed Spread 4th rack travel in: 1200 rpm : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 82...90 Spread Testina: Speed rpm Minimum rack trave: 8.00 : 300 Speed rpm Rack travel in mm : 5.70...6.30 Spread CONSTANT REGULATION Speed rpm : 300...450 **BREAKAWAY** TORQUE CONTROL Dimension a mm : 0.60 1st version rpm : 950 2nd speed Rack travel in m: 15.10...15.30 3rd speed rpm : 800 Rack travel in m: 15.70...15.90 Speed Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm Pressure hPa : 1000 Remarks: Rack travel mm : 14.30...114.50 Measurement 1/min: 600 Speed respect to setting at least 0.1 mm 1st pressure hPa : 400 Rack travel in m: 11.30...11.50 2nd pressure hPa : 640

Rack travel in m: 14.40...14.60 * 4th pressure hPa : 1360 Rack travel in m: 15.00...15.20 5th pressure hPa : -Rack travel in m: 8.80...9.10 1/min: 240 (260) FUEL DELIVERY CHARACTERISTICS Aneroid pressure h: 1700 rpm : 950 Del.quantity cm3/: 252.0...254.0 1000 s: (249.0...257.0) cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1700 Speed rpm: 800
Del.quantity cm3/: 263.0...265.0
1000 s: (260.0...268.0) cm3 : 8.001000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 135.0...137.0 1000 s: (132.0...140.0) cm3 : 8.00 1000 s: (12.0) 1mm rack travel less than full load rack tr: 14.10 rpm : 990...1000 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 250.0...270.0 1000 s: (246.0...274.0) * Increase in control-rod travel with

Rack travel in m: 13.40...13.60

3rd pressure hPa : 1240

Note remarks

: MB 9,6 o 1 Test sheet Edition : 27.02.91 : 20.12.90 Replaces Test oil : ISO-4113

Combination no. : 0 402 646 926

Injection pump

Pump designation: PE6P120A320LS7834 : 0 412 626 841 EP type number

Governor

Governor design. : RQV300...950PA797-19

: 0 421 813 901 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

1st version kW : 230.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test rozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm : (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.70...14.90

Del.quantity cm3/: 21.9...22.1

100 s: (21.6...22.4)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 6.5...6.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.00...1.50 travel mm

2nd speed rpm : 617

: 5.00...5.50 travel mm

rpm : 780 3rd speed

travel mm 6.10...6.60

4th speed 1009 rom

: 8.30...8.80 travel mm

: 1092 5th speed rpm

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1020 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Rack travel in m: 13.90...14.10 Speed rpm : 600 3rd pressure hPa : 1350 Rack travel in m: 14.80...15.00 * Aneroid pressure h: 1000 Del.auantity : 219.0...221.0 4th pressure hPa : -1000 : (216.0...224.0) Rack travel in m: 9.80...10.10 cm3 : 5.00 1000 : (9.00) Spread START CUT-OUT RATED SPEED Speed 1/min: 240 (260) 1st version FUEL DELIVERY CHARACTERISTICS Control lever position degrees: 118...126 1st version Testing: Aneroid pressure h: 1600 1st rack travel in: 13.90 Speed : 950 rpm rpm : 990...1000 Del.quantity cm3/: 234.0...237.0 2nd rack travel in: 4.00 1000 s: (231.0...240.0) Speed rpm : 1090...1120 4th rack travel in: 1200 Spread cm3 : 8.00 1000 s: (12.0) rpm : 0.00...1.00 Speed Aneroid pressure h: 1600 Speed rpm : 800 Del.quantity cm3/ : 241.0...245.0 1000 s: (238.0...248.0) LOW IDLE 1 Control lever position degrees: 82...90 cm3 : 8.00 Spread 1000 s: (12.0) Testing: Aneroid pressure h: -Speed rom : 200 Speed rpm : 500 Del.quantity cm3/ : 125.0...127.0 Minimum rack trave: 8.50 rpm : 300 1000 s: (122.0...130.0) Rack travel in mm : 6.50...6.80 Spread cm3 : 8.001000 s: (12.0) CONSTANT REGULATION rpm : 300...500 Speed **BREAKAWAY** TORQUE CONTROL Dimension a mm : 0.40 1st version 2nd speed rpm : 950 1mm rack travel less than Rack travel in m: 14.90...15.10 3rd speed rpm : 875 full load rack tr: 13.90 Rack travel in m: 15.10...15.30 Speed rpm : 990...1000 4th speed rpm : 800 Rack travel in m: 15.30...15.50 STARTING FUEL DELIVERY Aneroid/Altitude Compensator Test Speed rpm : 100 Del.quantity cm3/ : 210.0...230.0 1000 s: (206.0...234.0) 1st version Setting Remarks: Speed man : 600 Pressure hPa : 1000 Rack travel mm : 14.70...14.90 * Increase in control-rod travel with respect to setting at least 0.1 mm Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 11.50...11..70

2nd pressure hPa : 550

Note remarks

Test sheet : MB 9,6 o 3 Edition : 01.03.91

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 929

Injection pump

Pump designation : PE6P120A320LS7834 EP type number : 0 412 626 841

Governor

: RQV300...1050PA797-Governor design.

: 0 421 813 924 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M401 LA Engine

1st version kW : 230.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow.

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65)

Rack travel in mm : 20.00...21.00

: 6-3-5-2-4-1 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 15.20...15.40

Del.quantity cm3/: 23.1...23.3

100 s: (22.8...23.6)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 6.6...7.2

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.00...1.50

2nd speed rpm : 608

: 4.80...5.30 travel mm

rpm : 820 3rd speed

travel mm : 5.90...6.40

4th speed rpm : 1108

: 8.30...8.80 travel mm

5th speed : 1183 rpm

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

Speed rpm : 1085

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 600Speed Aneroid pressure h: 1000 : 231.0...233.0 Del.quantity 1000 : (228.0...236.0) : 5.00 cm3Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 120...128 Testina: 1st rack travel in: 14.40 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 Speed rpm : 1190...1220 4th rack travel in: 1300 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 87...92 Testing: Speed rpm Minimum rack trave: 8.70 : 300 Speed rpm Rack travel in mm : 6.60...7.20 CONSTANT REGULATION rpm : 300...450 Speed TORQUE CONTROL Dimension a mm : 0.50 2nd speed rpm : 1050 Rack travel in m: 15.40...15.60 3rd speed rpm : 800 Rack travel in m: 15.90...16.10 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 1000 Pressure Rack travel mm : 15.20...15.40 Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 10.20...10.40

3rd pressure hPa : 1400 Rack travel in m: 15.40...15.50 4th pressure hPa : -Rack trave! in m: 9.70...10.00 START CUT-OUT 1/min: 240 (260) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1700 : 1050 Speed rpm Del.quantity cm3/: 232.0...235.0 1000 s: (229.0...238.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1700 Speed : 800 rpm Del.quantity cm3/: 245.0...249.0 1000 s: (242.0...252.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 122.0...124.0 1000 s: (119.0...127.0) cm3 : 8.00Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 14.40 **besa**2 rpm : 1090...1100 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 220.0...240.0 1000 s: (216.0...244.0) Remarks:

2nd pressure hPa : 750

Rack travel in m: 14.20...14.40

Note remarks

Test sheet : MB 9,6 o 4 Edition : 27.02.91

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 930

Injection pump

Pump designation: PE6P12OA32OLS7834 : 0 412 626 841

EP type number

Governor

Governor design. : RQ300/1050PA972-7

Governer no. : 0 421 801 583

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M401 LA Engine

1st version kW : 230.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

REGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65)

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 15.20...15.40

Del.quantity cm3/: 23.1...23.3

100 s: (22.8...23.6)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 6.7...7.1

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Decree: -2

rpm : 600 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 231.0...233.0 1000 : (228.0...236.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm : 20.0

Testing: 1st rack travel in: 14.30 rpm : 1090...1105 Speed 2nd rack travel in: 4.00 rpm : 1065...1095 Speed 4th rack travel in: 1200 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring : 300 rpm Rack travel in mm: 6.9 Testing: Speed rom : 200 Minimum rack trave: 8.70 rpm : 300 Rack travel in mm : 6.70...7.10 Rack travel in mm : 2.00 Speed : 380...420 rom TORQUE CONTROL Dimension a mm 2nd speed : 1050 rpm Rack travel in m: 15.30...15.50 3rd speed rpm : 800 Rack travel in m: 15.90...16.10 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm hPa : 1000 Pressure : 15.20...15.40 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 10.20...10.40 2nd pressure hPa : 750 Rack travel in m: 14.20...14.40 3rd pressure hPa : 1400 Rack travel in m: 15.30...15.50 * 4th pressure hPa : -Rack travel in m: 9.70...10.00 FUEL DELIVERY CHARACTERISTICS

cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1700 : 800 Speed rpm Del.quantity cm3/: 245.0...248.0 1000 s: (242.0...251.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 122.0...124.0 1000 s: (119.0...127.0) cm3 : 8.00Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 14.30 rpm : 1090...1105

STARTING FUEL DELIVERY

: 100 Speed rpm

Remarks:

Speed

* Increase in control-rod travel with respect to setting at least 0.1 mm

1st version

Aneroid pressure h: 1700

rpm : 1050 Del.quantity cm3/: 232.0...235.0

1000 s: (229.0...238.0)

Note remarks

Test sheet : MB 11,1 b 1 : 27.02.91 Edition Replaces : 7.1.91 Test oil : ISO-4113

Combination no. : 0 402 646 931

Injection pump

Pump designation : PE6P12OA32OLS7837 EP type number : 0 412 626 842

Governor

: RQV300...1050PA797-Governor design.

: 0 421 813 911 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M441 LA

1st version kW : 250.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Openina (1997)

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35) Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 620

Rack travel in mm: 13.60...13.80

Del.quantity cm3/: 21.1...21.3

100 s: (20.8...21.6)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 5.7...6.0 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.00...1.50 travel mm

2nd speed rpm : 608

travel mm : 4.80...5.30

3rd speed rpm : 820

: 5.90...6.40 travel mm

rpm : 1108 4th speed

: 8.30...8.80 travel mm

rpm : 1280 5th speed

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1100

Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 600 Aneroid pressure h: 800 Del.quantity : 211.0...213.0 1000 : (208.0...216.0) : 5.00 Spread cm31000 : (9.00) RATED SPEED 1st version Control lever position degrees: 118...126 Testing: 1st rack travel in: 13.90 rpm : 1090...1105 Speed 2nd rack travel in: 4.00 rpm : 1165...1195 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 81...89 Testing: Speed rom Minimum rack trave: 7.70 Speed rom Rack travel in mm : 5.70...6.00 CONSTANT REGULATION rpm : 300...550 Speed TORQUE CONTROL Dimension a mm : 0.10 nd speed rpm : 1050 Rack travel in m: 14.90...15.10 2nd speed : 800 3rd speed rom Rack travel in m: 15.00...15.20 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm hPa : 800 Pressure : 13.60...13.80 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 200 Rack travel in m: 10.00...10.20 2nd pressure hPa : 500

3rd pressure hPa : 1000 Rack travel in m: 13.90...14.10 4th pressure hPa : 1200 Rack travel in m: 14.50...14.70 5th pressure hPa : -Rack travel in m: 8.70...9.00 START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500 Speed : 1050 rpm Del.quantity cm3/: 242.0...245.0 1000 s: (239.0...248.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1500 Speed rpm : 800 Del.quantity cm3/: 244.0...248.0 1000 s: (241.0...251.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed : 500 rpm Del.guantity cm3/: 135.0...137.0 1000 s: (132.0...140.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.90 Speed *** 1090...1105 rom STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 220.0...240.0 1000 s: (216.0...244.0) Remarks:

Rack travel in m: 12.70...12.90

Note remarks

Test sheet : DAF 8,7 a Edition : 01.03.91

Replaces

: ISO-4113 Test oil

: 0 402 646 932 Combination no.

Injection pump

Pump designation : PE6P120A320RS7228 EP type number : 0 412 626 845

Governor

Governor design. : RQV275...1150PA986

: 0 421 813 920 Governer no.

Customer-spec. information Customer : DAF

Engine : RS 222

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 075 Test lines

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30 : (5.15...5.35)

Rack travel in mm : 13.80...14.80

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasina

: 0.50 (0.75) Tolerance + - °

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.50...5.70 & maximum rack tra: 13.8...14.8 Difference ° CS : 3,25...4.75

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 14.30...14.40

Del.quantity cm3/: 17.7...17.9

100 s: (17.4...18.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0Rack travel in mm: 6.6...6.8 Del.quantity cm3/: 1.3...1.9 100 s: (1.0...2.2)

cm3 : 0.8

Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 275 1st speed

: 1.20...1.60 travel mm

2nd speed 315 rom :

: 1.80...2.20 travel mm rpm : 1205 3rd speed

: 8.10...8.50 travel mm

rpm : 13404th speed

: 9.70...9.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1200

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rbm : 1000 Aneroid pressure h: 1000

C25

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 116...124

Testing:

1st rack travel in: 13.30

Speed rpm: 1190...1200 2nd rack travel in: 4.00

rpm : 1320...1350 Speed

4th rack travel in: 1450

rcm : 0.00...1.40Speed

LOW IDLE 1 Control Lever

position degrees: 79...87

Testing:

Speed : 100 rpm Minimum rack trave: 7.10 rpm : 275

Rack travel in mm : 5.50...5.70

CONSTANT REGULATION

rpm : 315...365 Speed

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 600 rpm hPa : 1000 Pressure

: 14.30...14.40 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 12.60...12.80

2nd pressure hPa : 470

Rack travel in m: 13.90...14.00 3rd pressure hPa : 350 Rack travel in m: 13.00...13.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600 Del.quantity cm3/ : 110.0...120.0 1000 s: (106.0...124.0)

Spread

cm3 : 10.00

1000 s: (14.0)

Aneroid pressure h: -

Speed rpm : 600 Del.quantity cm3/ : 140.0...144.0 1000 s: (138.0...146.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.30

rpm : 1190...1200 Speed

LOW IDLE

Speed rpm : 275 Rack travel in mm : 5.50...5.70

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

Test sheet : DAF 8,7 b Edition : 01.03.91

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 933

Injection pump

Pump designation : PE6P12DA32ORS7228 EP type number : 0 412 626 845

Governor

Governor design: : RQ275/1150PA987 : 0 421 801 578 Governer no.

Customer-spec, information Customer : DAF

Engine : RS 222

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2,50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 13.80...14.80

: 1-5-3-6-2-4 Firing order

Phasina : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.50...5.70 & maximum rack tra: 13.8...14.8 Difference ° CS : 3.25...4.75

BASIC SETTING

rpm : 10001st speed

Rack travel in mm : 14.30...14.40

Del.quantity cm3/: 17.7...17.9

100 s: (17.4...18.2)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 275.0 2nd speed

Rack travel in mm : 6.6...6.8 Del.quantity cm3/ : 1.3...1.9

100 s: (1.0...2.2)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 550

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

Aneroid pressure h: 1000

Del.quantity : 177.0...179.0 1000 : (174.0...182.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 550 Speed rom Rack travel in mm: 16.0

C27

Testing: 1st rack travel in: 13.30 rpm : 1185...1200 2nd rack travel in: 4.00 rpm : 1270...1300 Speed 4th rack travel in: 1450 rpm : 0.00...1.40Speed LOW IDLE 1 Setting point w/out bumper spring : 275 rpm Rack travel in mm: 5.6 Testing: : 100 Speed rpm Minimum rack trave: 7.10 rpm : 275 Speed Rack travel in mm : 5.50...5.70 Rack travel in mm : 2.00 rpm : 330...370 Speed Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 1000 Pressure : 14.30...14.40 Rack travel mm Measurement $1/\min : 600$ Speed 1st pressure hPa : -Rack travel in m: 12.60...12.80 2nd pressure hPa : 470 Rack travel in m: 13.90...14.00 3rd pressure - : 350 Rack travel in m: 13.00...13.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 600 Speed Del.quantity cm3/: 110.0...120.0 1000 s: (106.0...124.0) cm3 : 10.00 1000 s: (14.0) Spread Aneroid pressure h: -Speed rpm : 600 Del.quantity cm3/ : 141.0...143.0 1000 s: (138.0...146.0)

1st version 1mm rack travel less than

full load rack tr: 13.30 Speed rpm : 1185...1200

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.50...5.70

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Note remarks

: DAF 8,7 c Test sheet Edition : 18.02.91

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 934

Injection pump

Pump designation: PE6P120A320RS7229 EP type number : 0 412 626 844

Governor

Governor design. : RQ275/1150PA987 Governer no. : 0 421 801 578

Customer-spec. information Customer : DAF

Engine : RS 200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 12.40...13.40

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.50...5.70 & maximum rack tra: 12.4...13.4 Difference ° CS : 3.25...4.75

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 15.7...15.9

100 s: (15.4...16.2)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 275.0 2nd speed

Rack travel in mm : 6.6...6.8 Del.quantity cm3/ : 1.3...1.9

100 s: (1.0...2.2)

cm3 : 0.8

Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 550

Rack travel in mm: 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

Aneroid pressure h: 1000

Del.quantity : 157.0...162.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 550 Speed rpm Rack travel in mm : 16.0

D01

Testing:

1st rack travel in: 11.90

Speed rpm : 1185...1200

2nd rack travel in: 4.00

Speed rpm: 1270...1300 4th rack travel in: 1450

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

rpm : 275 Rack travel in mm: 5.6

Testing:

Speed rpm : 100 Minimum rack trave: 7.10

Speed rpm : 275
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 330...370

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 600 Speed hPa : 1000 Pressure

Rack travel mm : 12.90...13.00

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 12.30...12.50

2nd pressure hPa : 180

Rack travel in m: 12.60...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600 Del.quantity cm3/ : 144.5...146.5 1000 s: (141.5...149.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90

rpm : 1185...1200 Speed

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.50...5.70

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

002

Note remarks

Test sheet : DAF 8,7 d Edition : 18.02.91

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 646 935

Injection pump

Pump designation: PE6P120A320RS7229 EP type number : 0 412 626 844

Governor

Governor design. : RQV275...1150PA986

: 0 421 813 920 Governer no.

Customer-spec. information Customer : DAF

: RS 200 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 12.40...13.40

003

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.50...5.70 & maximum rack tra: 12.4...13.4 Difference ° CS : 3.25...4.75

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 15.7...15.9

100 s: (15.4...16.2)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 275.0 2nd speed

Rack travel in mm: 6.6...6.8 Del.quantity cm3/: 1.3...1.9

100 s: (1.0...2.2)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 275 1st speed

travel mm : 1.20...1.60

2nd speed rpm : 315

travel mm : 1.80...2.20

3rd speed rpm : 1205

travel mm : 8.10...8.50

rpm : 1340 4th speed

: 9.70...9.90 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

Speed rpm : 1200 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1000 Del.quantity : 157.0...159.0 1000 : (154.0...162.0)

cm3 : 5.00 1000 : (9.00) Spread

RATED SPEED

1st version Control lever

position degrees: 116...124

Testing:

1st rack travel in: 11.90

rpm : 1190...1200 Speed

2nd rack travel in: 4.00

rpm : 1305...1335 Speed

4th rack travel in: 1450

Speed rpm : 0.00...1.40

LOW IDLE 1 Control lever

position degrees: 79...87

Testing:

Speed rpm : 100 Minimum rack trave: 7.10

Speed rpm : 275
Rack travel in mm : 5.50...5.70

CONSTANT REGULATION

rpm : 315...365 Spe∈d -

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 600 rpm hPa : 1000 Pressure

Rack travel mm : 12.90...13.00

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 12.30...12.50

2nd pressure hPa : 180

Rack travel in m: 12.60...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -Speed **L'DU** : 600

Del.quantity cm3/: 144.5...146.5 1000 s: (141.5...149.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90

Speed rpm : 1190...1200

LOW IDLE

Speed rpm : 275

Rack travel in mm : 5.50...5.70

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

Test sheet Edition

: DAF 11,7 n : 01.03.91

Replaces

Test oil

: TS0-4113

Combination no.

: 0 402 646 936

Injection pump

EP type number

Pump designation : PE6P12OA32ORS7230

: 0 412 626 843

Governor

Governor design. : RQV250...1000PA990K

Governer no.

: 0 421 815 274

Customer spec. information Customer

: DAF

Engine

: WS 315

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,8

Test lines

: 1 680 750 015

Outside diameter

x Wall thickness

x Length mm

: 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.00...5.10

: (4.95...5.15)

Rack travel in mm : 13.80...14.80

005

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - *

: 0.50 (0.75)

BASIC SETTING

1st speed

rom: 550

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 27.7...27.9

100 s: (27.4...28.2)

Spread

cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.8...6.0 Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

: 1.30...1.70 travel mm

2nd speed rpm : 285

: 2.10...2.50 travel mm

rpm : 1030 3rd speed

: 9.60...10.00 travel mm

rpm : 1145 4th speed

: 11.20...11.40 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1070 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 550

Aneroid pressure h: 1500

: 277.0...279.0 Del.quantity

1000 : (274.0...282.0)

: 5.00 cm3

1000 : (9.00)

RATED SPEED

Spread

1st version Control lever position degrees: 115...123 Testing: 1st rack travel in: 13.30 Speed rpm : 1025...1040 2nd rack travel in: 4.00 rpm : 1130...1160 Speed 4th rack travel in: 1275 rpm : 0.00...1.40 Speed LOW IDLE 1 Control lever position degrees: 70...78 Testing: : 100 Speed rpm Minimum rack trave: 7.40 : 250 Speed rpm Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00 Speed : 355...395 nom CONSTANT REGULATION : 285...335 Speed **LDW** TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 550 Rack travel in m: 12.80...12.90 od speed ppm : 700 2nd speed Rack travel in m: 13.20...13.30 3rd speed rpm : 800 Rack travel in m: 13.70...13.90 4th speed rpm : 925 Rack travel in m: 14.30...14.50 Aneroid/Altitude Compensator Test 1st version Setting : 980 Speed rpm hPa : 1500 Pressure Rack travel mm : 14.30...14.50 Measurement 1/min: 980 Speed

1st pressure hPa : -Rack travel in m: 8.80...9.00 2nd pressure hPa : 600 Rack travel in m: 11.80...11.90 3rd pressure hPa : 330 Rack travel in m: 10.00...10.20 FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1500 : 980 Speed rpm Del.quantity cm3/: 270.0...274.0 1000 s: (267.0...277.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 600 Del.quantity cm3/ : 162.0...164.0 1000 s: (159.0...167.0) **BREAKAWAY** 1st version 1mm rack travel less than

Speed rpm : 250 Rack travel in mm : 5.80...6.00 Del.quantity cm3/: 14.0...20.0 1000 s: (11.0...23.0) cm3 : 8.00 Spread

1000 s: (12.00)

rpm : 1025...1040

full load rack tr: 13.30

Remarks:

Speed

LOW IDLE

006

Note remarks

Test sheet : MB 9,6 r 1 Edition : 01.03.91

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 646 939

Injection pump

Pump designation: PE6P12OA32OLS7836 EP type number : 0 412 626 840

Governor

Governor design. : RQV300...950PA797-31

: 0 421 813 922 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

1st version kW : 200.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening 1

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65)

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 12.40...12.60

Del.quantity cm3/: 17.7...17.9

100 s: (17.4...18.2)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 5.2...5.8

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rom : 300

: 1.00...1.50 travel mm

2nd speed rpm : 617

: 5.00...5.50 travel mm

rpm : 780 3rd speed

: 6.10...6.60 travel mm

rpm : 1009 4th speed

travel mm : 8.30...8.80

: 1092 5th speed rom

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1020

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Rack travel in m: 12.50...12.70 * rpm : 600 Speed 4th pressure hPa : 1150 Aneroid pressure h: 750 Rack travel in m: 12.80...13.00 Del.quantity : 1//.u...182.0) 5th pressure hPa : -Rack travel in m: 9.50...9.80 : 5.00 1000 : (9.00) START CUT-OUT RATED SPEED Speed 1/min: 240 (260) 1st version FUEL DELIVERY CHARACTERISTICS Control Lever position degrees: 118...126 1st version Testina: Aneroid pressure h: 1400 1st rack travel in: 12.10 : 950 Speed rpm Del.quantity cm3/: 201.0...204.0 rpm : 990...1000 2nd rack travel in: 4.00 1000 s: (198.0...207.0) rpm : 1075...1105 Speed cm3 : 8.00 Spread 4th rack travel in: 1200 1000 s: (12.0) rpm : 0.00...1.00Speed Aneroid pressure h: 1400 : 800 Speed rpm LOW IDLE 1 Del.quantity cm3/: 201.0...205.0 Control lever 1000 s: (198.0...208.0) position degrees: 82...90 cm3 : 8.00Spread 1000 s: (12.0) Testina: Aneroid pressure h: rpm : 500 Speed : 200 rom Speed Del.quantity cm3/: 117.0...119.0 1000 s: (114.0...122.0) Minimum rack trave: 7.30 Speed rom : 300 Rack travel in mm : 5.20...5.80 Spread cm3 : 8.00 1000 s: (12.0) CONSTANT REGULATION rpm : 300...450 Speed **BREAKAWAY** TORQUE CONTROL Dimension a mm :-1st version rpm : 950 2nd speed 1mm rack travel lass than Rack travel in m: 13.10...13.30 3rd speed rpm : 800 full load rack tr: 12.10 Rack travel in m: 13.10...13.30 rpm : 990...1000 Speed Aneroid/Altitude STARTING FUEL DELIVERY Compensator Test Speed rpm : 100 Del.quantity cm3/ : 200.0...220.0 1000 s: (196.0...224.0) 1st version Setting rpm : 600 hPa : 750 Speed rpm Pressure Remarks: Rack travel mm : 12.40...12.50 Measurement * Increase in control-rod travel with 1/min: 600 Speed respect to setting at least 0.1 mm 1st pressure hPa : 300 Rack travel in m: 10.30...10.50 2nd pressure hPa : 450

800

Rack travel in m: 11.60...11.80

3rd pressure hPa : 1050

Note remarks

Test sheet : MB 4,6 q 1 Edition : 18.02.91

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 940

Injection pump

Pump designation: PE6P120A320LS7836 EP type number : 0 412 626 840

Governor

Governor design. : RQ300/950PA971-7 Governer no. : 0 421 801 580

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

1st version kW : 200.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65)

Rack travel in mm : 20.00...21.00 : 6-3-5-2-4-1 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 12.40...12.60

Del.quantity cm3/: 17.7...17.9

100 s: (17.4...18.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.5...5.8 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed nom : 600 Aneroid pressure h: 750

Del.quantity : 1//.u...182.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

rpm Rack travel in mm: 20.0

Testing: 1st rack travel in: 12.10 rpm : 990...1005 Speed 2nd rack travel in: 4.00 Speed rpm : 1065...1095 4th rack travel in: 1200 Speed rpm : 0.00...1.50 LOW IDLE 1 Setting point wout bumper spring rpm Rack travel in mm: 5.6 Testing: Speed rpm Minimum rack trave: 7.50 Aneroid/Altitude Compensator Test 1st version Settina Speed : 600 rpm hPa : 750 Pressure Rack travel mm : 12.40...12.50 Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 10.30...10.50 2nd pressure hPa : 450 Rack travel in m: 12.80...13.00 5th pressure hPa : -Rack travel in m: 9.60...9.90 FUEL DELIVERY CHARACTERISTICS 1st version

speed rpm : 300 Rack travel in mm : 5.50...5.80 Rack travel in mm : 2.00 Speed Rack travel in m: 11.60...11.80

3rd pressure hPa : 1050

Rack travel in m: 12.50...12.70 *
4th pressure hPa : 1150 Aneroid pressure h: 1400 Speed rpm : 950
Del.quantity cm3/ : 201.0...204.0
1000 s: (198.0...207.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1400 Speed rpm : 800 Del.quantity cm3/: 201.0...205.0 1000 s: (198.0...208.0)

Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 117.0...119.0 1000 s: (114.0...122.0) Spread cm3 : 8.00 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.10 rpm : 990...1005 Speed

STARTING FUEL DELIVERY

Speed rom : 100

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

Test sheet : MB 11,1 d Edition : 01.03.91

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 942

Injection pump

Pump designation : PE6P120A320LS7837

EP type number

: 0 412 626 842

Governor

Governor design. : RQ300/1050PA993 Governer no. : 0 421 801 581

Customer-spec. information

Customer : MERCEDES-BFN7

Engine : 0M441 LA

1st version kW : 250.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening.

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35) Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rom : 600

Rack travel in mm : 13.60...13.80

Del.quantity cm3/: 21.1...21.3

100 s: (20.8...21.6)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 5.7...6.0

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 800

: 211.0...213.0 Del.quantity

1000 : (208.0...216.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 600 rpm Rack travel in mm: 20.0

Testina: 1st rack travel in: 13.90 Spread rpm : 1090...1105 Speed 2nd rack travel in: 4.00 Speed rpm : 1145...1175 4th rack travel in: 1200 Speed rpm : 0.00...1.50Spread LOW IDLE 1 Setting point w/out bumper spring Speed : 300 rpm Speed Rack travel in mm: 5.8 Testing: Spread Speed rpm: 200 Minimum rack trave: 7.70 rpm : 300 Speed Rack travel in mm: 5.70...6.00
Rack travel in mm: 2.00
Speed rpm: 380...420 **BREAKAWAY** 1st version TORQUE CONTROL Dimension a mm 2nd speed rpm : 1050 Speed Rack travel in m: 14.90...15.10 3rd speed rpm : 800 Rack travel in m: 15.00...15.20 Aneroid/Altitude Speed Compensator Test 1st version Remarks: Setting Speed rpm : 600 hPa : 800 Pressure Rack travel mm : 13.60...13.80 Measurement Speed 1/min: 600 1st pressure hPa : 200 Rack travel in m: 10.00...10.20 2nd pressure hPa : 500 Rack travel in m: 12.70...12.90
3rd pressure hPa : 1000
Rack travel in m: 13.90...14.10
4th pressure hPa : 1200 Rack travel in m: 14.50...14.70 5th pressure hPa : -Rack travel in m: 8.80...9.10 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500

Del.quantity cm3/: 242.0...245.0 1000 s: (239.0...248.0) cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1500 Speed rpm : 800 Del.quantity cm3/ : 244.0...248.0 1000 s: (241.0...251.0) cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -: 500 rpm Del.quantity cm3/: 135.0...137.0 1000 s: (132.0...140.0) cm3 : 8.001000 s: (12.0)

1mm rack travel less than

full load rack tr: 13.90 rpm : 1090...1105

STARTING FUEL DELIVERY

: 100 rpm Del.quantity cm3/: 220.0...240.0 1000 s: (216.0...244.0)

Speed

rpm : 1050

Note remarks

Test sheet : MB 11,0 t10 Edition : 01.02.91

Replaces : -

Test oil : ISO-4113

Combination no. : 0 402 646 943

Injection pump

Pump designation : PE6P120A320S7808

CT-type Tunter -: 0.412 626 816

Governor

Governor design. : RQV300...950PA795-28

Governer no. : 0 421 813 925

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M441 LA

1st version kW : 250.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00X2.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.90...14.10

Del.quantity cm3/: 22.1...22.3

100 s: (21.8...22.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.7...6.0

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3: 0.6

100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.00...1.50

2nd speed rpm : 567

travel mm : 4.40...4.90

3rd speed rpm : 780

travel mm : 6.10...6.60

4th speed rpm : 1009

travel mm : 8.30...8.80

5th speed rpm: 1092

travel mm : 9.80...10.30

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 1090

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 600 Speed Aneroid pressure h: 950 Del.quantity : 221.0...226.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 95...103 Testing: 1st rack travel in: 14.10 rpm : 990...1000 Speed 2nd rack travel in: 4.00 Speed rpm : 1065...1095 4th rack travel in: 1150 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 69...77 Testina: Speed rpm Minimum rack trave: 7.70 Speed rpm : 300 Reck travel in mm : 5.70...6.00 CONSTANT REGILATION rpn: : 300...500 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm Pressure hPa : 900 : 13.90...14.10 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 350 Rack travel in m: 10.70...10.90 2nd pressure hPa : 600 Rack travel in m: 12.80...13.00 3rd pressure hPa : 1150 Rack travel in m: 14.20...14.40 4th pressure hPa : 1250 Rack travel in m: 14.70...14.90 5th pressure hPa : -Rack travel in m: 9.20...9.50 FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1550 : 950 Speed rpm Del.quantity cm3/: 251.0...254.0 1000 s: (248.0...257.0) : 8.00 Spread cm3 1000 s: (12.0) Aneroid pressure h: 1550 : 750 Speed rpm Del.guantity cm3/: 242.0...246.0 1000 s: (239.0...249.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed 500 rpm Del.quantity cm3/: 138.0...140.0 1000 s: (135.0...143.0) cm3 : 8.00 Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 14.10 Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm: 100

Remarks:

D14

Note remarks

Test sheet : MB 11,0 t11 Edition : 01.02.91

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 646 944

Injection pump

Pump designation : PE6P120A320LS7808 : 0 412 626 816 EP type number

Governor

: RQV300...1050PA797-Governor design.

: 0 421 813 926 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M441 LA Engine

1st version KW : 250.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35) Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.10...14.30

Del.quantity cm3/: 21.6...21.8

100 s: (21.3...22.1)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0Rack travel in mm: 5.7...6.0 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.00...1.50

2nd speed 608 rpm :

4.80...5.30 travel mm

820 3rd speed rpm

travel mm 5.90...6.40

1108 4th speed rpm

travel mm 8.30...8.80

5th speed : 1183 rpm

travel mm : 9.60...10.30

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1090 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rom : 600 Aneroid pressure h: 750 : 216.0...218.0 Del.quantity 1000 : (213.0...221.0) : 5.00 Spread cm3 1000 (9.00)RATED SPEED 1st version Control Lever position degrees: 118...126 Testina: 1st rack travel in: 14.30 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1175...1205 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 54...62 Testing: Speed : 200 rom Minimum rack trave: 7.70 rpm Rack travel in mm : 5.70...6.00 CONSTANT REGULATION : 300...500 Speed man Aneroid/Altitude Compensator Test 1st version Settina Speed : 600 rpm hPa : 750 Pressure Rack travel mm : 14.10...14.30 Measurement Speed 1/min: 600 1st pressure hPa : 200 Rack travel in m: 10.30...10.50 2nd pressure hPa : 500 Rack travel in m: 13.00...13.20 3rd pressure hPa : 950 Rack travel in m: 14.20...14.40 * 4th pressure hPa : 1150 Rack travel in m: 14.80...15.00

START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1350 : 1050 Speed המיז Del.quantity cm3/: 243.0...245.0 1000 s: (240.0...248.0) Spread cm3 : 8.001000 s: (12.) Aneroid pressure h: 1350 Speed rpm: 750 Del.quantity cm3/: 239.0...243.0 1000 s: (236.0...246.0) cm3 : 8.00 Spread 1000 s: (12.00 : 500 Speed rpm Del quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0) cm3 : 8.00 Spread 1000 s: (12.00 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 14.30 rpm : 1090...1100 Speed STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 210.0...230.0

1000 s: (206.0...234.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

5th pressure hPa : -

Rack travel in m: 9.20...9.50

Note remarks

Test sheet : SCA 14,0 h6 Edition : 06.04.90

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 648 860

Injection pump

Pump designation : PE8P120A920/4LS7125

EP type number : 0 412 628 833

Governor

Governor design. : RQV200...1050PA736-6

: 0 421 813 740 Governer no.

Customer-spec. information Customer : SCANIA

Engine : DS14, DSC14

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 7- 3- 4- 5-

Phasing : 0-45-90-135-180-225-

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 13.50...13.60

Del.quantity cm3/: 21.4...21.6

100 s: (21.1...21.9)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 225.0 Rack travel in mm: 4.9...5.3 Del.quantity cm3/: 1.6...2.0

100 s: (-) cm3 : 0.3Spread

100 s: (0.6)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 225 : 1.20...1.60 1st speed

travel mm 2nd speed

rpin : 350

: 2.30...2.90 travel mm

rpm : 650 3rd speed

travel mm : 4.00...4.60

4th speed rpm : 1095

: 8.20...8.40 travel mm

rpm : 1215 5th speed

: 9.70...10.10 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1100 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

Aneroid pressure h: 900 Del.quantity : 214.0...216.0 1000 : (211.0...219.0)

: 6.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 112...120

Testing:

1st rack travel in: 12.50 rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rom : 1200...1230 Speed

4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 61...69

Testing:

Speed : 100 rpm Minimum rack trave: 6.50 : 225 Speed rpm

Rack travel in mm : 4.90...5.10

Rack travel in mm : 2.00 Speed rpm : 380...440

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 900 Pressure

Rack travel mm : 13.50...13.60

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 11.20...11.60 2nd pressure hPa : 365 Rack travel in m: 12.80...12.90

3rd pressure hPa : 215

Rack travel in m: 11.90...12.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 1050 Del.quantity cm3/ : 205.0...213.0 1000 s: (203.0...215.0)

Aneroid pressure h: -

Speed : 500 rpm

Del.quantity cm3/: 158.0...162.0 1000 s: (156.0...164.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 240.0...290.0 1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225 Rack travel in mm : 4.90...5.10

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Start-of-delivery setting with ROBO

diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS BEGINNING OF DELIVERY Test pressure, bar: 25...27 Note remarks : 5.20...5.30 Prestroke mm Test sheet : (5.15...5.35) : MB 14,7 t 1 Edition Rack travel in mm : 20.00...21.00 : 16.01.91 Replaces : 30.3.90 Firing order : 8- 7- 2- 6- 3- 5-Test oil : ISO-4113 Combination no. : 0 402 648 889 Injection pump Phasing : 0-45-90-135-180-225-Pump designation : PE8P120A320LS7816 270-315 EP type number : 0 412 628 829 Tolerance + - ° : 0.50 (0.75) Governor Governor design. : R0300/950PA932-2 Time to cyl. no. : 8 Governer no. : 0 421 801 526 BASIC SETTING Customer-spec. information Customer : MERCEDES-BENZ 1st speed rpm: 600 Engine : 0M442 LA Rack travel in mm : 14.60...14.80 1st version kW : 362.0 Del.quantity cm3/: 25.4...25.6 Rated speed : 1900 100 s: (25.1...25.9) TEST BENCH REQUIREMENTS Spread cm3 : 0.6Test oil inlet temp. °C : 38...42 100 s: (0.9) Overflow valve rpm : 300.0 2nd speed : 1 417 413 025 Rack travel in mm : 5.9...6.5 Del.quantity cm3/: 1.6...2.2 Inlet press., bar: 1.50 100 s: (1.3...2.5) cm3 : 0.6Spread Overflow 100 s: (1.0) quantity min. 1/h: 100...120 GUIDE SLEEVE POSITION Test nozzle holder Control-lever position : 1 688 901 019 assembly Degree: -2 Speed rpm : 600 Opening Rack travel in mm : 19.20...20.80 pressure, bar : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate diameter mm : 0,8 1st version Speed rpm : 600 Aneroid pressure h: 1000 Test lines : 1 680 750 067 : 254.0...256.0 Del.quantity 1000 : (251.0...259.0)

Outside diameter : 6.00 Spread cm3 x Wall thickness 1000 : (9.00) x Length mm : 6.00x1.50x1000 RATED SPEED (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. per values __ Setting point: Speed rpm : 600

Rack travel in mm: 20.0 Del.quantity cm3/: 270.0...273.0 1000 s: (267.0...276.0) cm3 : 8.00Testing: Spread 1st rack travel in: 14.20 1000 s: (12.0) rpm : 990...1005 Aneroid pressure h: 1600 Speed 2nd rack travel in: 4.00 Speed rpm : 800 Del.quantity cm3/ : 270.0...274.0 1000 s: (267.0...277.0) rpm : 1070...1100 Speed 4th rack travel in: 1150 rom : 0.00...1.50Speed Spread cm3 : 8.00 1000 s: (12.0) LOW IDLE 1 Aneroid pressure h: -Setting point w/out bumper spring : 500 Speed rpm Speed rpm : 300 Del.quantity cm3/: 145.0...147.0 Rack travel in mm: 6.2 1000 s: (142.0...150.0) cm3 : 8.00Spread Testina: 1000 s: (12.0) : 200 Speed rpm Minimum rack trave: 7.80 rpm : 300 **BREAKAWAY** Rack travel in mm : 5.90...6.50 Rack travel in mm : 2.00 1st version : 380...420 Speed rom 1mm rack travel less than TORQUE CONTROL full load rack tr: 14.20 Dimension a mm : 0.90 Speed rpm : 990...1005 : 950 2nd speed rpm Rack travel in m: 15.20...15.40 STARTING FUEL DELIVERY 3rd speed rpm : 800 Rack travel in m: 15.50...15.70 Speed : 100 rpm Del.quantity cm3/: 240.0...260.0 Aneroid/Altitude Compensator Test 1000 s: (236.0...264.0) Remarks: 1st version Setting : 600 Speed rpm Pressure hPa : 1000 : 14.60...14.80 Rack travel mm Measurement Speed $1/\min : 600$ 1st pressure hPa : 350 Rack travel in m: 11.60...11.80 2nd pressure hPa : 700 Rack travel in m: 13.80...14.00

3rd pressure hPa : 1200

Rack travel in m: 14.80...15.00

4th pressure hPa : 1300 Rack travel in m: 15.20...15.40 5th pressure hPa : -Rack travel in m: 10.20...10.50 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1600

Speed

020

rpm : 950

Note remarks

Test sheet : MB 12,8 o 2 : 27.02.91 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 895

Injection pump

Pump designation: PE8P12OA320LS7835 : 0 412 628 847 EP type number

Governor

Governor design. : RQ300/1050PA972-1

Governer no. : 0 421 801 545

Customer-spec, information

Customer : MERCEDES-BENZ

Engine : 0M402 A

1st version kW : 280.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65) Rack travel in mm : 20.00...21.00

: 8- 7- 2- 6- 3- 5-Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.60...14.80

Del.quantity cm3/: 22.1...22.3

100 s: (21.8...22.6)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm : 6.2...6.8 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

Speed rpm: 600 Rack travel in mm: 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 900

Del.quantity : 221.0...226.0)

: 6.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm: 20.0 Testing: 1st rack travel in: 13.30 Speed rpm : 1090...1105 2nd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1350 Speed rpm : 0.00...1.50 LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm: 6.5 Testina: Speed : 200 rpm Minimum rack trave: 7.80 : 300 rpm Rack travel in mm : 6.20...6.80 Rack travel in mm : 2.00 rpm : 380...420 Speed TORQUE CONTROL Dimension a mm : 0.50 nd speed rpm : 950 Rack travel in m: 14.30...14.50 2nd speed rpm 3rd speed rpm : 800 Rack travel in m: 14.90...15.10 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 600 Pressure hPa : 900 : 14.60...14.80 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 250 Rack travel in m: 9.90...10.10 2nd pressure hPa : 600 Rack travel in m: 13.30...13.50 3rd pressure hPa : 1100 Rack travel in m: 14.70...14.80 * 4th pressure hPa : -Rack travel in m: 9.00...9.30 FUEL DELIVERY CHARACTERISTICS

Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1500 : 800 Speed rpm Del.quantity cm3/: 234.0...238.0 1000 s: (231.0...241.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: -Speed rpm : 500
Del.quantity cm3/ : 122.0...124.0
1000 s: (119.0...127.0)
Spread cm3 : 8.00 Spread 1000 s: (12.0) BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.30

rpm : 1090...1105 Speed

STARTING FUEL DELIVERY

: 100 Speed rom

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

Speed

1st version

Aneroid pressure h: 1500

rpm : 1050 Del.quantity cm3/: 222.0...225.0 1000 s: (219.0...228.0)

Note remarks

Test sheet : MB 14,7 w 2 Edition : 27.02.91

Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 898

Injection pump

Pump designation : PE8P120A320LS7838 EP type number : 0 412 628 848

Governor

Governor design: RQ300/950PA971-4

: 0 421 801 558 Governer no.

Customer-spec. information

Customer : MERCEDES-BEN7

Engine : 0M442 A

1st version kW : 320.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.60...14.80

Del.quantity cm3/: 22.2...22.4

100 s: (21.9...22.7)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 6.2...6.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position Degree: -2

rpm : 600 Speed

Rack travel in mm: 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 950

: 222.0...224.0 Del.quantity

1000 : (219.0...227.0)

cm3 : 6.00 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 600 rpm

Rack travel in mm : 20.0 Testina: 1st rack travel in: 14.30 rpm : 990...1005 Speed 2nd rack travel in: 4.00 Speed rpm : 1070...1100 4th rack travel in: 1150 rom : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.5 Testing: Speed rpm : 200 Minimum rack trave: 7.80 Speed : 300 rpm Rack travel in mm : 6.20...6.80 Rack travel in mm : 2.00 Speed : 380...420 rom TORQUE CONTROL Dimension a mm : ? 2nd speed : 950 rpm Rack travel in m: 15.30...15.50 3rd speed rpm : 800 Rack travel in m: 15.90...16.10 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rom Pressure hPa : 950 Rack travel mm : 14.60...14.80 Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 10.60...10.80 2nd pressure hPa : 680 Rack travel in m: 14.00...14.20 3rd pressure hPa : 1100 Rack travel in m: 14.90...15.10 4th pressure hPa : 1200 Rack travel in m: 15.50...15.70 5th pressure hPa : -Rack travel in m: 8.80...9.00 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1400

: 950

rpm

Del.quantity cm3/: 243.0...245.0 1000 s: (240.0...248.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1400 Speed : 800 rpm Del.quantity cm3/: 255.0...259.0 1000 s: (252.0...262.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 125.0...127.0 1000 s: (122.0...130.0) Spread cm3 : 8.001000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 14.30 Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm: 100

Remarks:

D24

Speed

Note remarks

Test sheet : MB 14,7 v 2 : 27.02.91 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 899

Injection pump

Pump designation : PE8P120A320LS7839 : D 412 628 849

EP type number

Governor Governor design. : RQ300/950PA971-5

Governer no.

: 0 421 801 559

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M442 LA Engine

1st version kW : 370.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly

: 1 688 901 019

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10

: (4.95...5.15)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

Phasina : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.10...14.30

Del.quantity cm3/: 25.2...25.4

100 s: (24.9...25.7)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm : 5.2...5.8

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1050

: 252.0...254.0 Del.quantity

1000 : (249.0...257.0)

cm3 : 6.00 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 600 rpm

Rack travel in mm : 20.0 Testing: Spread 1st rack travel in: 14.70 rpm : 990...1005 Speed 2nd rack travel in: 4.00 Speed Speed rpm : 1065...1095 4th rack travel in: 1150 rom : 0.00...1.50Speed Spread LOW IDLE 1 Setting point w/out bumper spring Speed : 300 Speed MON Rack travel in mm: 5.5 Spread Testing: : 200 Speed rpm Minimum rack trave: 6.80 rpm : 300 **BREAKAWAY** Rack travel in mm : 5.20...5.80 Rack travel in mm : 2.00 1st version Speed : 370...410 rom TORQUE CONTROL Dimension a mm Speed : 950 2nd speed rom Rack travel in m: 15.70...15.90 : 800 3rd speed rpm Rack travel in m: 16.00...16.20 Speed Aneroid/Altitude Compensator Test Remarks: 1st version Setting Speed rpm : 600 hPa : 1050 Pressure : 14.10...14.30 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 290 Rack travel in m: 8.70...8.90 2nd pressure hPa : 780 Rack travel in m: 13.20...13.40 3rd pressure hPa : 1200 Rack travel in m: 14.30...14.50 4th pressure hPa : 1380 Rack travel in m: 15.10...15.30 5th pressure hPa :-Rack travel in m: 8.40...8.70 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1800

Del.quantity cm3/: 290.0...293.0 1000 s: (287.0...296.0) cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1800 rpm : 800 Del.quantity cm3/: 295.0...299.0 1000 s: (292.0...302.0) cm3 : 8.001000 s: (12.0) Aneroid pressure h: -: 500 rpm Del.quantity cm3/: 139.0...141.0 1000 s: (136.0...144.0) cm3 : 8.00 1000 s: (12.0)

1mm rack travel less than

full load rack tr: 14.70 rpm : 990...1005

STARTING FUEL DELIVERY

rpm : 100

D26

Speed

rpm : 950

Note remarks

Test sheet : MB 14,7 a24 : 27.02.91 Edition : 30.11.90 Replaces Test oil : ISO-4113

Combination no. : 0 402 648 903

Injection pump

Pump designation : PE8P120A320LS7801-1 EP type number : 0 412 628 818

Governor

Governor design. : RQV350...1050PA866-8 Governer no. : 0 421 813 905

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M442 A Engine

1st version kW : 260.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.20...5.30 : (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order

: 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 500

Rack travel in mm: 13.90...14.10

Del.quantity cm3/: 20.1...20.3

100 s: (19.8...20.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0Rack travel in mm : 5.0...5.5 Del.quantity cm3/ : 1.6...2.2 100 s: (1.3...2.5)

Spread cm3 : 0.6100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

: 1.30...1.80 travel mm

rpm : 570 : 3.30...3.80 rpm : 900 2nd speed travel mm

3rd speed

: 5.40...5.90 travel mm

rpm : 1107 4th speed

: 7.80...8.30 travel mm

rpm : 1204 5th speed

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1130

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 500 Speed Aneroid pressure h: 650 : 201.0...203.0 Del.quantity 1000 : (198.0...206.0) Spread cm3 : 5.00 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 117...125 Testing: 1st rack travel in: 11.50 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rom : 1160...1190 Speed 4th rack travel in: 1300 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 65...73 Testing: : 250 Speed rom Mini m rack trave: 7.60 : 350 Spec. rpm Rack travel in mm : 5.00...5.50 CONSTANT REGULATION rpm : 350...550 Speed TORQUE CONTROL Dimension a mm : 1.60 : 1050 2nd speed rpm Rack travel in m: 12.50...12.70 : 700 3rd speed rpm Rack travel in m: 14.10...14.30 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 650 Pressure : 13.90...14.10 Rack travel mm Measurement 1/min: 600 Speed

3rd pressure hPa : 900 Rack travel in m: 14.00...14.10 * 4th pressure hPa : -Rack travel in m: 10.9 11.20 START CUT-OUT 1/min: 270 (290) Speed FUFL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100 Speed rpm : 1050 Del.quantity cm3/: 180.0...183.0 1000 s: (177.0...186.0) Spread cm3 : 8.001000 s: (12.) Aneroid pressure h: 1100 Speed rpm : 700 Del.quantity cm3/: 213.0...217.0 1000 s: (210.0...220.0) : 500 rom Del.quantity cm3/: 147.0...149.0 1000 s: (144.0...152.0) Spread cm3 : 8.00 1000 s: (12.00 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.50 rpm : 1090...1100 Speed STARTING FUEL DELIVERY rpm: : 100 Speed Del.quantity cm3/: 180.0...200.0 1000 s: (176.0...204.0) Remarks: * Increase in control-rod travel with respect to setting at least 0.1 mm

1st pressure hPa : 300

2nd pressure hPa : 375

Rack travel in m: 12.20...12.40

Rack travel in m: 13.30...13.50

Note remarks

Test sheet : MB 14,7 w 1 : 27.02.91 Edition Replaces : 16.1.91 : ISO-4113 Test oil

: 0 402 648 908 Combination no.

Injection pump

Pump designation : PE8P12OA32OLS7838 EP type number : 0 412 628 848

Governor

Governor design. : RQV300...950PA797-23

Governer no. : 0 421 813 910

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M442 A Engine

1st version kW : 320.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

Phasina : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.60...14.80

Del.quantity cm3/: 22.2...22.4

100 s: (21.9...22.7)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm: 6.2...6.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300 travel mm : 1.00...1.50

rpm : 617 2nd speed

travel mm : 5.00...5.50

3rd speed rpm : 780

travel mm : 6.10...6.60

rpm : 1009 4th speed

: 8.30...8.80 travel mm

rpm : 1092 5th speed

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 Speed

rpm : 1020 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 600 Speed Aneroid pressure h: 900 : 222.0...224.0 Del.quantity 1000 : (219.0...227.0) Spread cm3: 6.00 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 120...128 Testing: 1st rack travel in: 14.30 rpm : 990...1000 Speed 2nd rack travel in: 4.00 rpm : 1080...1110 Speed 4th rack travel in: 1200 Speed rpm : 0.00...1.03LOW IDLE 1 Control lever position degrees: 82...90 Testing: Speed nom Minimum rack trave: 7.80 : 300 rpm Rack travel in mm : 6.20...6.80 CONSTANT REGULATION rpm : 300...500 Speed TORQUE CONTROL Dimension a mm : 0.60 nd speed rpm : 950 Rack travel in m: 15.30...15.50 2nd speed rpm 3rd speed rpm : 800 Rack travel in m: 15.90...16.10 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 600 Pressure hPa : 900 Rack travel mm : 14.60...14.80 Measurement Speed 1/min : 600 1st pressure hPa : 300 Rack travel in m: 10.60...10.80 2nd pressure hPa : 680

Rack travel in m: 14.00...14.20

3rd pressure hPa : 1100 Rack travel in m: 14.90...15.10 4th pressure hPa : 1200 Rack travel in m: 15.40...15.60 5th pressure hPa : -Rack travel in m: 8.70...8.90 START CUT-OUT 1/min: 240 (260) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1400 Speed : 950 rpm Del.quantity cm3/: 243.0...246.0 1000 s: (240.0...249.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1400 Speed COM Del.quantity cm3/: 255.0...259.0 1000 s: (252.0...262.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 125.0...127.0 1000 s: (122.0...130.0) cm3 : 8.00Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 14.30 rpm : 990...1000 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 220.0...240.0 1000 s: (216.0...244.0) Remarks: :

Note remarks

Test sheet : MB 14,7 u 2 Edition : 27.02.91

Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 909

Injection pump

Pump designation : PE8P120A320LS7840 EP type number : 0 412 628 850

Governor

Governor design. : RQ300/950PA971-6 Governer no. : 0 421 801 575

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 A

1st version kW : 250.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

Phasina : 0-45-90-135-180-225-

270-315

Toterance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.90...14.10

Del.quantity cm3/: 20.7...20.9

100 s: (20.4...21.2)

cm3 : 0.6Spread

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm: 6.2...6.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6 100 s: (1.0) Spread

GUIDE SLEEVE POSITION Control-lever position

Dearee: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 800

: 207.0...209.0 Del.quantity 1000 : (204.0...212.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 600 rom

Rack travel in mm: 20.0 Testing: 1st rack travel in: 12.80 : 990...1005 Speed rpm 2nd rack travel in: 4.00 rpm : 1070...1100 Speed 4th rack travel in: 1150 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring Speed rpm Rack travel in mm: 6.5 Testing: Speed rpm : 200 Minimum rack trave: 7.80 : 300 rpm Rack travel in mm : 6.20...6.80 Rack travel in mm : 2.00 : 380...420 Speed rpm Aneroid/Altitude Compensator Test 1st version Settina Speed : 600 rpm hPa : 800 Pressure Rack travel mm : 13.90...14.10 Measurement $1/\min : 600$ Speed 1st pressure hPa : 300 Rack travel in m: 10.70...10.90 2nd pressure hPa : 550 Rack travel in m: 12.70...12.90 3rd pressure hPa : 1CJO Rack travel in m: 14.00...14.20 * 4th pressure hPa : 1150 Rack travel in m: 14.40...14.70 FUEL DELIVERY CHARACTERISTICS 1st version

Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 123.0...125.0 1000 s: (120.0...128.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.80 Speed rpm : 990...1005 STARTING FUEL DELIVERY Speed : 100 rom Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

Speed

Spread

Speed

Aneroid pressure h: 1400

Aneroid pressure h: 1400

rpm

rpm Del.quantity cm3/: 205.0...208.0

: 950

: 800

cm3 : 8.001000 s: (12.0)

Del.quantity cm3/: 236.0...240.0 1000 s: (233.0...243.0)

1000 s: (202.0...211.0)

Note remarks

Test sheet : MB 14,7 u 3 Edition : 01.03.91

Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 910

Injection pump

Pump designation : PE8P120A320LS7840 EP type number : 0 412 628 850

Governor

Governor design. : RQV300...950PA797-26

: 0 421 813 915 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 250.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values __

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm : (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.40...13.60

Del.quantity cm3/: 20.7...20.9

100 s: (20.4...21.2)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm: 6.0...6.6 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6 Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rom : 300

: 1.00...1.50 travel mm

2nd speed rpm : 617 travel mm

: 5.00...5.50 rpm : 780

3rd speed

: 6.10...6.60 travel mm

rpm : 1009 4th speed

: 8.30...8.80 travel mm

rpm : 1092 5th speed

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1020 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 600Aneroid pressure h: 800 : 207.0...209.0 Del.quantity 1000 : (204.0...212.0) Spread cm3 : 6.001000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 118...126 Testing: 1st rack travel in: 12.10 Speed rpm : 990...1000 2nd rack travel in: 4.00 Speed rpm : 1070...1100 4th rack travel in: 1200 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 82...90 Testing: Speed rom : 200 Minimum rack trave: 7.60 Speed rpm Rack travel in mm : 6.00...6.60 CONSTANT REGULATION rom : 300...450 Speed TORQUE CONTROL Dimension a mm : 1.00 nd speed rpm : 950 Rack travel in m: 13.10...13.30 2nd speed rpm 3rd speed rpm : 800 Rack travel in m: 14.10...14.30 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 mon: hPa : 800 Pressure : 13.40...13.60 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 350

Rack travel in m: 11.20...11.40

Rack travel in m: 12.80...13.00

2nd pressure hPa : 500

3rd pressure hPa : 1050 Rack travel in m: 13.80...14.00 4th pressure hPa : -Rack travel in m: 10.30...10.60 START CUT-OUT 1/min : 240 (260) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1400 950 Speed rpm Del.quantity cm3/: 205.0...208.0 1000 s: (202.0...211.0) Spread cm3 : 8.001000 s: (12.) Aneroid pressure h: 1400 Speed : 800 rpm Del.quantity cm3/: 236.0...240.0 1000 s: (233.0...243.0) Spread cm3 : 8.001000 s: (12.00 500 Speed rom Del. quantity cm3/: 123.0...125.0 1000 s: (120.0...128.0) cm3 : 8.00Spread 1000 s: (12.00 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.10 rpm : 990...1000 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 210.0...230.0 1000 s: (206.0...234.0)

Remarks:

EOR

Note remarks

Test sheet : MB 14,7 g 7 Edition : 01.03.91

Replaces :-

Test oil : ISO-4113

Combination no. : 0 402 678 814

Injection pump

Pump designation : PE8P120A320LS7801-1

EP type number

: 0 412 628 818

Governor

Governor design. : RSV350...1050P0A535

Governer no. : 0 421 833 352

Customer spec. information

Customer : MERCEDES-BENZ

Engine : OM442LA

1st version kW : 260.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (4.15...5.35)

Rack travel in mm : 9.00...12.00

Firing order : 8-7-2-6-3-5-

4- 1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 500

Rack travel in mm : 13.90...14.10

Del.quantity cm3/: 20.1...20.3

100 s: (19.8...20.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.6...5.8 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cni3: 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 500 Aneroid pressure h: 700

Del.quantity : 201.0...203.0 1000 : (198.0...206.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control Lever position degrees: 86...94 Testing: 1st rack travel in: 12.00 rpm : 1070...1080 Speed Speed 2nd rack travel in: 4.00 rpm : 1140...1158 Speed 4th rack travel in: 1400 Spread rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 63...71 Setting point w/out bumper spring Spread rpm Rack travel in mm: 5.7 Speed Testina: rpm : 100 Speed Minimum rack trave: 19.50 Spread : 350 Speed rpm Rack travel in mm: 5.60...5.80 Rack travel in mm: 2.00 : 360...420 Speed rom **BREAKAWAY** SET ICLE AUXILIARY SPRING Rack travel in mm : 2.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1030 Rack travel in m: 13.00...13.20 2nd speed rpm : 700 Rack travel in m: 14.40...14.60 3rd speed rpm : 900 Rack travel in m: 13.50...13.70 Aneroid/Altitude Remarks: Compensator Test 1st version Setting : 600 Speed rom Pressure hPa : 700 : 13.90...14.10 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 400 Rack travel in m: 12.30...12.50 2nd pressure hPa : 500 Rack travel in m: 13.20...13.40 3rd pressure hPa : 925 Rack travel in m: 14.10...14.20 4th pressure hPa

FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100 : 1030 rpm Del.quantity cm3/: 181.0...184.0 1000 s: (178.0...187.0) cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1100 Speed rpm : 700
Del.quantity cm3/ : 213.0...217.0
1000 s: (210.0...220.0) cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -: 500 rpm Del.quantity cm3/: 143.0...145.0 1000 s: (140.0...148.0) cm3 : 8.001000 s: (-) 1st version 1mm rack travel less than full load rack tr: 12.00 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 180.0...200.0 1**000** s: (176.0...204.0)

Rack travel in m: 11.80...12.00

Note remarks

: CUM 8,3 r : 18.02.91 Test sheet Edition : 14.12.90 Replaces Test oil : ISO-4113

Combination no. : 0 402 736 807

Injection pump

Pump designation : PES6P110A120RS7214 EP type number : 0 412 716 805

Governor

: RQV350...1100PA964-1 Governor design.

: 0 421 815 253 Governer no.

Customer-spec. information Customer : C.D.C.

Engine : 6CTA-A

: 201.0 1st version kW Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 115...125

Test nozzle holder

assembly : 1 688 901 101

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45 : (4.30...4.50)

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rom: 1050

Rack travel in mm : 15.70...15.80

Del.quantity cm3/: 20.6...20.8

100 s: (20.3...21.1)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 350.02nd speed Rack travel in mm: 5.7...5.9 Del.quantity cm3/: 2.7...3.3 100 s: (2.5...3.5)

cm3 : 0.8Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

: 1.80...2.00 travel mm

2nd speed **rpm** : 450

: 3.10...3.50 travel mm 3rd speed rpm : 600

travel mm : 5.10...5.50

rpm : 1000 4th speed

: 8.10...8.30 travel mm

rpm : 1200 5th speed

travel mm : 9.60...10.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed Aneroid pressure h: 1500

Del.quantity : 206.0...208.0 1000 : (203.0...211.0)

cm3 : 5.00 1000 : (9.00) Spread

RATED SPEED

1st version Control lever

position degrees: 64...72

Testing:

1st rack travel in: 14.40

rpm : 1145...1155 Speed

2nd rack travel in: 4.00

Speed rpm : 1300...1330 4th rack travel in: 1400

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 11...19

Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm : 5.8

Testina:

Speed rpm: 275 Minimum rack trave: 7.20 rpm : 350

Rack travel in mm : 5.70...5.90

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 15.70...15.80

: 650 2nd speed rpm

Rack travel in m: 13.20...13.60

3rd speed rpm : 1100

Rack travel in m: 15.40...15.60

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed : 1050 rom hPa : 1500 Pressure

: 15.70...15.80 Rack travel mm

Measurement

1/min: 1050 Speed

1st pressure hPa : -

Rack travel in m: 8.40...8.80

2nd pressure hPa : 340

Rack travel in m: 10.20...10.30

3rd pressure hPa : 840

Rack travel in m: 13.60...14.00

START CUT-OUT

1/min: 290 (300) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500

Speed rpm : 650

Del.quantity cm3/: 187.5...193.5 1000 s: (184.5...196.5)

cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 98.0...102.0 1000 s: (96.0...104.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.40

Speed rpm : 1145...1155

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 145.0...165.0

1000 s: (140.0...170.0)

Rack travel in mm : 11.00...12.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.70...5.90
Del.quantity cm3/ : 27.0...33.0
1000 s: (25.0...35.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

: C.D.C # 3916627

Start-of-delivery mark = 5.5° after

start of delivery cyl. 1.

Bow dimension:

Sliding-sleeve position = 37.0 mm

Note remarks

: CUM 5,9 w 1 : 14.12.90 : 15.11.90 Test sheet Edition Replaces

Test oil : ISO-4113

: 0 402 736 810 Combination no.

Injection pump

Pump designation : PES6P110A120RS7213

EP type number : 0 412 716 804

Governor

: RQV400...1250PA964-2 Governor design.

Governer no. : 0 421 815 254

Customer-spec. information Customer : C.D.C.

Engine : 6BTA-A

: 141.0 1st version kW Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 115...125

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.6

Test Lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm

: 4.35...4.45 : (4.30...4.50)

Rack travel in mm: 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 14.80...14.90

Del.quantity cm3/: 15.9...16.1

100 s: (15.6...16.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 400.0 2nd speed

Rack travel in mm: 5.4...5.6 Del.quantity cm3/: 3.2...3.8

100 s: (3.0...4.0)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

: 0.70...1.10 travel mm

rpm : 400 2nd speed

travel mm : 1.40...1.60

3rd speed rpm : 600

: 2.90...3.30 travel mm

rpm : 1300 4th speed

: 7.20...7.40 travel mm

rpm : 1500 5th speed

: 9.10...9.50 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250 Aneroid pressure h: 1200

Del.quantity : 159.0...164.0)

Spread cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 59...67

Testing:

1st rack travel in: 13.80 Speed rpm : 1295...1305 2nd rack travel in: 4.00

rpm : 1460...1490 Speed

4th rack travel in: 1600

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control Lever

position degrees: 11...19

Testing:

Speed rpm : 275 Minimum rack trave: 7.20 rpm : 400

Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 14.80...14.90

2nd speed rpm : 800

Rack travel in m: 13.10...13.30

Aneroid/Altitude Compensator Test

1st version Setting

Speed

: 1250 rpm hPa : 1200 Pressure

Rack travel mm : 14.80...14.90

Measurement

Speed 1/min: 1250

1st pressure hPa : -

Rack travel in m: 8.30...8.70

2nd pressure hPa : 415

Rack travel in m: 10.20...10.30

3rd pressure hPa : 740

Rack travel in m: 13.20...13.60

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 800 Speed rpm

Del.quantity cm3/: 158.0...164.0 1000 s: (155.0...167.0)

cm3 : 8.00 Spread 1000 s: (12.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 95.5...99.5 1000 s: (93.5...101.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.80

rpm : 1295...1305 Speed

STARTING FUEL DELIVERY

Speed : 100 rom

Del.quantity cm3/: 145.0...165.0

1000 s: (140.0...170.0)

Rack travel in mm : 12.00...13.00

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 5.40...5.60 Del.quantity cm3/: 32.0...38.0 1000 s: (30.0...40.0)

cm3 : 8.00Spread 1000 s: (12.00)

Remarks:

: C.D.C # 3919090

Start-of-delivery mark = 5.5° after

start of delivery cyl. 1.

Note remarks

Test sheet : CUM 5,9 w 2 Edition : 18.02.91

Replaces

Test oil : ISO-4113

Combination no. : 0 402 736 811

Injection pump

Pump designation : PES6P110A120RS7213 : 0 412 716 804

EP type number

Governor

: RQV400...1250PA964-3 Governor design.

: 0 421 815 255 Governer no.

Customer-spec. information Customer : C.D.C.

Engine : 6BTA-A

: 147.0 1st version kW Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 D47

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 115...125

Test nozzle holder

: 1 688 901 101 assembly

Opening (

pressure, bar : 207...210

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

: 4.35...4.45 Prestroke mm : (4.30...4.50)

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 14.80...14.90

Del.quantity cm3/: 15.8...16.0

100 s: (15.5...16.3)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 400.02nd speed Rack travel in mm : 5.4...5.6 Del.quantity cm3/: 3.2...3.8

100 s: (3.0...4.0)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

: 0.70...1.10 travel mm

2nd speed rpm : 400

travel mm : 1.40...1.60

3rd speed rpm : 600

travel mm : 2.90...3.30

: 1300 4th speed rpm

travel mm : 7.20...7.40

1500 5th speed rpm

: 9.10...9.50 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250 Aneroid pressure h: 1200

Del.quantity : 136.3...163.5)

: 5.00 Spread cm31000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 56...64

Testing:

1st rack travel in: 13.80

rpm : 1290...1320 Speed

2nd rack travel in: 4.00

Speed rpm : 1470...1480

4th rack travel in: 1600

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 12...20

Testing:

Speed rpm Minimum rack trave: 7.20 rpm : 400

Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 14.80...14.90

2nd speed rpm : 800

Rack travel in m: 13.20...13.40

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 1250 Speed Pressure hPa : 1200

Rack travel mm : 14.80...14.90

Measurement

1/min: 1250 Speed

1st pressure hPa : -

Rack travel in m: 8.20...8.60

2nd pressure hPa : 410

Rack travel in m: 10.00...10.10

3rd pressure hPa : 755

Rack travel in m: 13.10...13.50

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 800 Del.quantity cm3/ : 156.5...162.5

1000 s: (153.5...165.5)

cm3 : 8.00Spread 1000 s: (12.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 90.0...94.0 1000 s: (88.0...96.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.80

Speed rpm : 1290...1320

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 140.0...160.0 1000 s: (135.0...165.0)

Rack travel in mm: 11.90...12.90

LOW IDLE

Speed rpm : 400

Rack travel in mm : 5.40...5.60 Del.quantity cm3/: 32.0...38.0

1000 s: (30.0...40.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

: C.D.C # 3918321

Start-of-delivery mark = 5.5° after

start of delivery cyl. 1.

Note remarks

Test sheet : CUM 8,3 r 3 Edition : 18.02.91 Replaces : 15.11.90

Test oil : ISO-4113

Combination no. : 0 402 736 812

Injection pump

Pump designation : PES6P110A120RS7214

: 0 412 716 805 EP type number

Governor

Governor design. : RQV350...1200PA964-4

: 0 421 815 256 Governer no.

Customer-spec. information Customer : C.D.C.

: 6CTA-A Engine

1st version kW : 156.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 115...125

Test nozzle holder

assembly : 1 688 901 101

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45 : (4.30...4.50)

Rack travel in mm : 10.50

Firing order : 1-5- 3- 6- 2- 4

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1200 1st speed

Rack travel in mm : 12.60...12.70

Del.quantity cm3/: 14.7...14.9

100 s: (14.4...15.2)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 350.0 2nd speed

Rack travel in mm: 5.7...5.9 Del.quantity cm3/: 2.7...3.3

100 s: (2.5...3.5)

Spread cm3 : 0.8 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL 1st speed rpm : 350

: 1.80...2.00 travel mm

2nd speed : 450 rpm

travel mm 3.10...3.50

700 3rd speed rpm

5.90...6.30 travel mm

1200 4th speed rpm

9.00...9.20 travel mm

5th speed rpm : 1400

travel mm : 10.70...11.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed

Aneroid pressure h: 1200 Del.quantity : 147.5...149.5 1000 : (144.5...152.5)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 60...68

Testing:

1st rack travel in: 11.60

Speed rpm : 1245...1255 2nd rack travel in: 4.00

rpm : 1375...1405 Speed

4th rack travel in: 1500

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 11...19

Testing:

Speed rpm : 275 Minimum rack trave: 7.20 rpm : 350

Rack travel in mm : 5.70...5.90

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 1200 Rack travel in m: 12.60...12.70

2nd speed rpm : 650

Rack travel in m: 11.20...11.60

3rd speed rpm : 550

Rack travel in m: 11.10...11.50

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 1200 rom Pressure hPa : 1200

Rack travel mm : 12.60...12.70

Measurement

1/min: 1200 Speed

1st pressure hPa : -

Rack travel in m: 8.00...8.40

2nd pressure hPa : 225

Rack travel in m: 9.20...9.30

3rd pressure hPa : 515 Rack travel in m: 11.10...11.50

START CUT-OUT

Speed $1/\min : 290 (300)$

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 650 Del.quantity cm3/: 151.0...157.0

1000 s: (148.0...160.0)

Spread cm3 : 8.001000 s: (12.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 90.0...94.0 1000 s: (88.0...96.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60

Speed rpm : 1245...1255

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 145.0...165.0 1000 s: (140.0...170.0)

Rack travel in mm : 11.00...12.00

LOW IDLE

rpm : 350 Speed

Rack travel in mm : 5.70...5.90 Del.quantity cm3/: 27.0...33.0

1000 s: (25.0...35.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

: C.D.C # 3917088

Start-of-delivery mark = 5.5° after

start of delivery cyl. 1.

Bow dimension:

Sliding-sleeve position = 37.0 mm

Note remarks

: MAN 11,9 t2 Test sheet Edition : 18.02.91 Replaces : 1.2.91

Test oil : ISO-4113

Combination no. : 0 402 736 817

Injection pump

Pump designation : PES6P120A720/3LS7209

: 0 412 726 837 EP type number

Governor

: RQV300...1000PA962-3 Governor design.

: 0 421 815 270 Governer no.

Customer-spec. information Customer : MAN

: D2866LF09 Engine

: 309.0 1st version kW Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.80...4.90 Prestroke mm : (4.75...4.95)

Rack travel in mm : 15.00...16.00

: 6-2-4-1-5-3 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60 & maximum rack tra: 15.0...16.0 Difference ° CS : 1.75...3.25

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 28.8...29.0

100 s: (28.5...29.3)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 4.8...5.2

Dec.quantity cm3/: 2.0...2.6 100 s: (1.7...2.9)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1045 1st speed

: 8.30...8.50 travel mm rpm : 300

2nd speed

: 1.90...2.30 travel mm rpm : 500 3rd speed

travel mm : 4.00...4.60

rpm : 900 4th speed

travel mm : 6.50...6.90 : 1350

5th speed rom

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1140 Speed

Rack travel in mm : 15.20...17.80 Measurement FULL LOAD DELIV. AT FULL LOAD STOP $1/\min : 900$ Speed 1st version 1st pressure hPa : -Speed rpm : 750 Rack travel in m: 9.00...9.20 Aneroid pressure h: 1300 2nd pressure hPa : 220 Del.quantity : 288.0...293.0) Rack travel in m: 9.30...9.40
3rd pressure hPa : 720
Rack travel in m: 11.70...11.90 cm3 : 5.00 1000 : (9.00) START CUT-OUT RATED SPEED Speed 1/min : 220 (240) 1st version Control Lever FUEL DELIVERY CHARACTERISTICS position degrees: 284...292 Testina: 1st version 1st rack travel in: 12.60 Aneroid pressure h: 1300 rpm : 1940...1050 Speed : 900 Speed rpm 2nd rack travel in: 4.00 Del.quantity cm3/: 302.0...308.0 1000 s: (299.0...311.0) Speed rpm : 1140...1170 4th rack travel in: 1300 Aneroid pressure h: 1300 rpm : 0.00...1.00Speed Speed : 1000 rpm Del.quantity cm3/: 276.0...282.0 1000 s: (273.0...285.0) LOW IDLE 1 Control lever Aneroid pressure h: -Speed rpm : 750 Del.quantity cm3/ : 102.0...112.0 1000 s: (99.0...115.0) position degrees: 239...247 Testing: rpm : 100 cm3 : 10.00 Speed Spread Minimum rack trave: 6.50 1000 s: (14.0) Speed rpm: 300 Rack travel in mm: 4.90...5.10 Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 168.0...170.0 CONSTANT REGULATION 1000 s: (165.0...173.0) Speed rcm : 300...420 TORQUE CONTROL BREAKAWAY Dimension a mm Torque control curve - 1st version 1st version 1st speed rpm : 900 1mm rack travel less than Rack travel in m: 14.10...14.20 2nd speed rpm : 1000 Rack travel in m: 13.60...13.80 full load rack tr: 12.60 rpm : 1040...1050 Speed 3rd speed rpm : 750 Rack travel in m: 13.20...13.40 STARTING FUEL DELIVERY 4th speed rpm : 400 Rack travel in m: 12.20...12.50 Speed : 100 rpm Del.quantity cm3/: 200.0...220.0 1000 s: (196.0...224.0) Aneroid/Altitude Compensator Test LOW IDLE 1st version Setting Speed rpm: 300 Rack travel in mm: 4.80...5.20 Speed : 900 rom hPa : 1300 Del.quantity cm3/: 20.0...26.0 Pressure Rack travel mm : 14.10...14.20 1000 s: (17.0...29.0)

Spread

cm3 : 8.00 1000 s: (12.00)

Remarks:

: MAN-NR. 3-7094

Setting and blocking of pointer of start-of-delivery sensor on cyl. 6 start of delivery

Note remarks

Test sheet : MAN 11,9 t3 Edition : 18.02.91 : 14.12.90 Replaces Test oil : ISO-4113

Combination no. : 0 402 736 818

Injection pump

Pump designation : PES6P120A720/3LS7209

EP type number : 0 412 726 837

Governor

: RQV300...1000PA960-4 Governor design.

: 0 421 815 272 Governer no.

Customer-spec. information Customer : MAN

Engine : D2866LF09

: 309.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90 : (4.75...4.95) Rack travel in mm : 15.00...16.00

: 6-2-4-1-5-3 Firing order

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60 & maximum rack tra: 15.0...16.0 Difference ° CS : 1.75...3.25

BASIC SETTING

rpm: 750 1st speed

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 28.8...29.0

100 s: (28.5...29.3)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 4.8...5.2 Dec. quantity cm3/: 2.0...2.6

100 s: (1.7...2.9)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1045 1st speed

9.50...9.70 travel mm

2nd speed 300 rom :

1.40...1.80 travel mm

500 3rd speed rpm :

3.50...4.10 travel mm

4th speed 900 rpm :

: 7.70...8.10 travel mm

rpm : 1350 5th speed

: 13.00...14.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

E20

Rack travel in mm : 15.20...17.80 Measurement FILL LOAD DELIV. AT FULL LOAD STOP 1/min: 900 Speed 1st version 1st pressure hPa : rpm : 750 Speed Rack travel in m: 9.00...9.20 Aneroid pressure h: 1300 2nd pressure hPa : 220 Del.quantity : 280.0...293.0) Rack travel in m: 9.30...9.40
3rd pressure hPa : 720
Rack travel in m: 11.70...11.90 : (9.00) 1000 START CUT-OUT RATED SPEED Speed 1/min : 220 (240) 1st version Control lever FUEL DELIVERY CHARACTERISTICS position degrees: 294...302 Testina: 1st version 1st rack travel in: 12.60 Aneroid pressure h: 1300 rpm : 1040...1050 Speed : 900 Speed rpm Del.quantity cm3/: 302.0...308.0 1000 s: (299.0...311.0) 2nd rack travel in: 4.00 rpm : 1140...1170 Speed 4th rack travel in: 1300 Aneroid pressure h: 1300 Speed rpm : 0.00...1.00Speed : 1000 rpm Del.quantity cm3/: 276.0...282.0 1000 s: (273.0...285.0) LOW IDLE 1 Control lever Aneroid pressure h: position degrees: 247...255 Speed rom Del.quantity cm3/: 102.0...112.0 1000 s: (99.0...115.0) Testing: Speed : 100 cm3 : 10.00rom Spread Minimum rack trave: 6.50 1000 s: (14.0) rpm : 300 Aneroid pressure h: -Rack travel in mm : 4.90...5.10 rpm : 500 Speed Del.quantity cm3/: 168.0...170.0 1000 s: (165.0...173.0) CONSTANT REGULATION rpm : 300...420 Speed TORQUE CONTROL BREAKAWAY Dimension a mm :? Torque control curve - 1st version 1st version rpm : 900 1st speed 1mm rack travel less than Rack travel in m: 14.10...14.20 rpm : 1000 2nd speed full load rack tr: 12.60 Rack travel in m: 13.60...13.80 Speed rpm : 1040...1050 rpm : 750 3rd speed Rack travel in m: 13.20...13.40 STARTING FUEL DELIVERY 4th speed rpm : 400 Rack travel in m: 12.20...12.50 Speed rpm : 100 Del.quantity cm3/ : 200.0...220.0 1000 s: (196.0...224.0) Aneroid/Altitude Compensator Test LOW IDLE 1st version Setting Speed rpm : 300 : 900 Rack travel in mm : 4.80...5.20 Speed rom Del.quantity cm3/: 20.0...26.0 1000 s: (17.0...29.0) Pressure hPa : 1300

Rack travel mm

: 14.10...14.20

cm3 : 8.00 1000 s: (12.00) Spread

Remarks:

: MAN-NR. 3-7095

Setting and blocking of pointer of start-of-delivery sensor on cyl. 6 start of delivery

Note remarks

: MAC 11,1 a9 : 25.2.91 : 30.10.89 Test sheet Edition Replaces

Test oil : ISO-4113

Combination no. : 0 402 746 833

Injection pump

Pump designation : PES6P120A720RS7135 : 0 412 726 807 EP type number

Governor

: RQV325...975PA848-11 Governor design.

Governer no. : 0 421 815 190

Customer-spec. information Customer : MACK

: E6-350 2VH Engine

1st version kW : 257.0 : 1950 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 975

Rack travel in mm: 14.10...14.20

Del.quantity cm3/: 23.0...23.2

100 s: (22.7...23.5)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm: 4.5...4.7 Del.quantity cm3/: 3.8...4.4

100 s: (3.6...4.6) cm3 : 0.8 Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.40...1.60

2nd speed : 450

travel mm : 2.50...2.80

rpm : 800 3rd speed

: 4.80...5.00 travel mm

rpm : 1050 4th speed : 7.30...7.60 travel mm

rpm : 1200 5th speed

: 9.40...9.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1190 Speed

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 975 Aneroid pressure h: 900 : 230.5...232.5 Del.quantity 1000 : (227.5...235.5) Spread cm3 : 5.001000 : (9.00) RATED SPEED 1st version Control lever position degrees: 55...63 Testing: 1st rack travel in: 13.10 rpm : 1015...1025 2nd rack travel in: 4.00 Speed rpm : 1130...1160 4th rack travel in: 1300 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 10...18 Testing: Speed rom : 275 Minimum rack trave: 6.00 Speed rpm: 325 Rack travel in mm : 4.50...4.70 CONSTANT REGULATION Speed rpm : 325...600 TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 975 Rack travel in m: 14.10...14.20 2nd speed rpm : 700 Rack travel in m: 13.70...13.90 3rd speed rpm : 600 Rack travel in m: 0.00...13.30 Aneroid/Altitude Compensator Test 1st version Setting Speed : 700 rpm hPa : 900 Pressure Rack travel mm : 13.80...13.90 Measurement Speed 1/min: 700 1st pressure hPa : -Rack travel in m: 7.80...8.20

3rd pressure hPa : 510 Rack travel in m: 12.20...12.60 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 rpm : 700 Speed Del.quantity cm3/: 227.0...233.0 1000 s: (224.0...236.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: -Speed rpm : 400 Del.quantity cm3/: 125.0...129.0 1000 s: (123.0...131.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.10 Speed rpm : 1015...1025 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 110.0...150.0 1000 s: (100.0...160.0) Rack travel in mm : 7.80...8.20 LOW IDLE Speed rpm : 325
Rack travel in mm : 4.50...4.70 Del.quantity cm3/: 38.0...44.0 1000 s: (36.0...46.0) Spread cm3 : 8.001000 s: (12.00) Remarks: Delivery-valve spring pre-tension 3.0...3.2 mm. Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

2nd pressure hPa : 240

Rack travel in m: 9.30...9.40

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 5.00...5.10 : (4.95...5.15) Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order Test sheet : UNI 9,5 e : 27.02.91 Edition Replaces : 16.2.90 : ISO-4113 Test oil : 0-60-120-180-240-300 Phasing : 0 402 746 834 : 0.50 (0.75) Combination no. Tolerance + - ° Injection pump Time to cyl. no. : 1 Pump designation : PES6P120/.720RS7154 EP type number : 0 412 726 811 BASIC SETTING Governor Governor design. : RQV275...1100PA888K 1st speed rpm: 1100 Governer no. : 0 421 815 191 Rack travel in mm : 11.60...11.70 Customer-spec. information : IVECO-UNIC Del.quantity cm3/: 19.8...20.0 Customer Engine : 8460.41.102 100 s: (19.5...20.3) 1st version kW : 235.0 cm3 : 0.5Spread : 2200 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 275.0 2nd speed Rack travel in mm: 4.9...5.1 Test oil Del.quantity cm3/: 2.0...2.6 100 s: (1.7...2.9) inlet temp. °C : 38...42 Overflow valve cm3 : 0.8Spread : 1 417 413 025 100 s: (1.2) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 105 assembly GUIDE SLEEVE TRAVEL : 275 : 1.20...1.40 1st speed rpm Opening travel mm : 207...210 pressure, bar 450 2nd speed rpm : : 3.00...3.80 travel mm Orifice plate : 800 3rd speed rpm diameter mm : 0,8 : 6.20...6.60 travel mm 4th speed rpm : 1100 : 9.70...9.90 travel mm Test Lines : 1 680 750 008 rpm : 1350 5th speed : 13.00...14.00 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 6.00X2.00X600 Control-lever position Degree: -1 (A) Injection pump setting values rpm : 1125 Speed Insp. values in parentheses Rack travel in im: 15.20...17.80 Set equal delivery quant. per values FULL LOAD DELTY. AT FULL LOAD STOP BEGINNING OF DELIVERY 1st version

rpm : 1100

Aneroid pressure h: 1200

Speed

Test pressure, bar: 25...27

Del.quantity : 198.0...203.0) : 5.00 cm3 Spread 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 118...126 Testing: 1st rack travel in: 10.60 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1200...1230 Speed 4th rack travel in: 1350 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 68...76 Testina: Speed rpm : 100 Minimum rack trave: 6.50 Speed rpm Rack travel in mm : 4.90...5.10 CONSTANT REGULATION rpm : 280...400 Speed TORQUE CONTROL Dimension a mm : ? Torque control curve - 1st version 1st speed rpm : 850 Rack travel in m: 12.00...12.10 nd speed rpm : 1100 Rack travel in m: 11.60...11.70 2nd speed 3rd speed rpm : 950 Rack travel in m: 11.80...12.10 4th speed rpm : 750 Rack travel in m: 11.80...12.10 rpm : 400 5th speed Rack travel in m: 11.20...11.60 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 850 hPa : 1200 Pressure : 12.00...12.10 Rack travel mm Measurement

1/min: 850

1st pressure hPa : -

Rack travel in m: 9.00...9.40 2nd pressure hPa : 515
Rack travel in m: 11.30...11.40
3rd pressure hPa : 305
Rack travel in m: 9.50...9.70 START CUT-OUT 1/min: 195 (215) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 : 850 Speed rpm Del.quantity cm3/: 212.0...218.0 1000 s: (209.0...221.0) Aneroid pressure h: rpm : 500 Speed Del.guantity cm3/: 127.0...129.0 1000 s: (124.0...132.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.60 rpm : 1140...1150 Speed STARTING FUEL DELIVERY Speed : 100 rpm Dec.quantity cm3/: 120.0...150.0 1000 s: (116.0...154.0) Remarks:

E26

Speed

Note remarks

Test sheet : RVI 6,2 i Edition : 18.02.91 Replaces : 28.11.90 Test oil : TSO-4113

Combination no. : 0 402 746 894

Injection pump

Pump designation : PES6P110A320RS7208 : 0 412 716 803 EP type number

Governor

: RQV275...1175PA942-1 Governor design.

: 0 421 815 244 Governer no.

Customer-spec, information Customer

Engine : MIDRO60226 M

1st version kW : 210.0 Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 4.10...4.20

: (4.05...4.25)

Rack travel in mm : 13.00...14.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 14.00...14.10 & maximum rack tra: 20.0...21.0 Difference ° CS : 2.75...4.25

BASIC SETTING

1st speed rpm: 1175

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 17.0...17.2

100 s: (16.7...17.4)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 275.0 2nd speed

Rack travel in mm : 5.00...5.60 Del.quantity cm3/: 2.0...2.5

100 s: (1.7...2.7)

cm3 : 0.4 100 s: (0.7) Spread

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1320

: 9.70...9.90 travel mm

rpm : 275 2nd speed

travel mm : 0.90...1.10

3rd speed : 600 rpm

travel mm : 4.20...4.60

: 1000 4th speed rpm

: 7.10...7.50 travel mm

: 1600 5th speed rpm

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 Speed

rpm : 1370 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

Rack travel in m: 10.30...10.90 2nd pressure hPa : 520 Rack travel in m: \$2.30...12.50 3rd pressure hPa : 240 1st version rpm : 1175 Speed Aneroid pressure h: 1000 : 170.0...172.0 Rack travel in m: 10.90...11.30 Del.quantity 1000 : (167.5...174.5) cm3 : 4.00START CUT-OUT Spread 1000 : (7.50) 1/min: 215 (235) Speed RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control Lever position degrees: 110...118 1st version Aneroid pressure h: 1000 : 700 Testing: Speed rpm Del.quantity cm3/: 148.0...154.0 1000 s: (145.0...157.0) 1st rack travel in: 13.00 rpm : 1245...1255 Speed 2nd rack travel in: 4.00 Aneroid pressure h: rpm : 1420...1450 rpm : 700 Speed Speed Del.quantity cm3/: 50.0...60.0 4th rack travel in: 1600 rpm : 0.00...1.001000 s: (47.0...63.0) Speed Spread cm3 : 8.00 LOW IDLE 1 1000 s: (-) Control lever Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 73.0...75.0 1000 s: (70.5...77.5) position degrees: 56...64 Testing: : 200 Speed rpm Minimum rack trave: 5.90 **BREAKAWAY** rpm Rack travel in mm : 5.20...5.40 1st version CONSTANT REGULATION 1mm rack travel less than rpm : 350...480 Speed full load rack tr: 13.00 rpm : 1245...1255 TORQUE CONTROL Speed Dimension a mm : ? Torque control curve - 1st version STARTING FUEL DELIVERY 1st speed rpm : 1175 Rack travel in m: 14.00...14.10 nd speed rpm : 700 Rack travel in m: 13.25...13.45 Speed rpm : 100 Del.quantity cm3/ : 90.0...120.0 1000 s: (86.0...124.0) 2nd speed : 800 3rd speed rpm Rack travel in m: 13.50...13.80 LOW IDLE Aneroid/Altitude Compensator Test Speed rpm : 275 Rack travel in mm : 5.00...5.60 Del.quantity cm3/: 20.0...25.0 1000 s: (17.5...27.5) 1st version cm3 : 4.50Setting Spread 1000 s: (7.50) : 1175 Speed rpm hPa : 1000 Pressure : 14.00...14.10 Rack travel mm Remarks: Measurement 1/min: 1175 Speed

E28

1st pressure hPa : -

BOSCH INJ. PUMP TEST SPECIFICATIONS Test pressure, bar: 22...24 Note remarks Prestroke mm : 2.75...2.85 : (2.70...2.90) Test sheet : MAC 12,0 h2 Rack travel in mm : 11.00 Edition : 18.02.91 : 1-5-3-6-2-4 Firing order Replaces : 7.1.91 Test oil : ISO-4113 Combination no. : 0 402 746 896 Phasing : 0-60-120-180-240-300 Phasing Injection pump : 0.50 (0.75) Tolerance + - ° Pump designation : PES6P120A720RS7200 EP type number : 0 412 726 833 Time to cyl. no. : 1 Governor Governor design. : RQV325...900PA944-11 BASIC SETTING : 0 421 815 260 Governer no. 1st speed rpm: 900 Customer-spec. information Rack travel in mm : 14.50...14.60 Customer : MACK TRUCKS Del.quantity cm3/: 27.7...27.9 : E7-350 Engine 100 s: (27.4...28.2) 1st version kW : 261.0 Rated speed : 1800 cm3 : 0.5Spread TEST BENCH REQUIREMENTS 100 s: (0.9) Test oil 2nd speed rpm : 340.0inlet temp. °C : 38...42 Rack travel in mm: 4.6...4.8 Dal.quantity cm3/: 3.1...3.7 100 s: (2.9...3.9) Overflow valve : 2 417 413 011 cm3 : 0.8 Spread 100 s: (1.2) Overflow quantity min. 1/h: 160...170 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 101 assembly GUIDE SLEEVE TRAVEL 1st speed rpm : 325 **Opening** travel mm : 1.40...1.60 : 207...210 pressure, bar 2nd speed rpm : 450 2.80...3.20 travel mm Orifice plate 3rd speed rpm : 700 diameter mm : 0,6 : 6.00...6.40 travel mm 4th speed 900 rom : : 8.50...8.70 travel mm Test lines : 1 680 750 008 rpm : 1050 5th speed travel mm : 9.80...10.20 Outside diameter x Wall thickness FULL LOAD DELIV. AT FULL LOAD STOP x Length mm : 6.00x2.00x600 1st version (A) Injection pump setting values Speed rpm : 900 Aneroid pressure h: 1200 Insp. values in parentheses : 277.5...279.5 Set equal delivery quant. Del.quantity 1000 : (274.5...282.5) per values cm3 : 5.00 1000 : (9.00) Spread

BEGINNING OF DELIVERY

RATED SPEED

1st version Control lever

position degrees: 59...67

Testing:

1st rack travel in: 13.50

Speed rpm: 940...990 2nd rad travel in: 4.00

Speed rpm : 1115...1125 4th rack travel in: 1200

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 8...16

Testing:

Speed : 275 rpm Minimum rack trave: 6.00

Speed rpm : 340

Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 900

Rack travel in m: 14.50...14.60

?nd speed npm : 625

Rack travel in m: 13.80...14.00

3rd speed rpm : 675
Rack travel in m: 13.80...14.00
4th speed rpm : 500

Rack travel in m: 11.90...12.70

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed : 900 rom hPa : 1200 Pressure

Rack travel mm : 14.50...14.60

Measurement

1/min: 900 Speed

1st pressure has: -

Rack travel in m: 8.10...8.50

2nd pressure hPa : 400

Rack travel in m: 9.80...9.90

3rd pressure hPa : 775

Rack travel in m: 12.60...13.00

START CUT-OUT

1/min: 250 (255) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

: 625 Speed rpm

Del.quantity cm3/: 290.0...296.0 1000 s: (287.0...299.0)

Spr ead cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -: 875 Speed rpm

Del.quantity cm3/: 199.0...201.0 * 1000 s: (180.5...207.5)

Aneroid pressure h:

Speed rpm : 400 Del.quantity cm3/: 150.0...154.0 1000 s: (148.0...156.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.50

rpm : 940...990 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 170.0...210.0

1000 s: (160.0...220.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

: 340 rpm

Rack travel in mm : 4.60...4.80 Del.quantity cm3/: 31.0...37.0

1000 s: (29.0...39.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC5188-P12

Bow dimension:

Sliding-sleeve position = 37.0 mm * This test specification applies only

to the engine/nozzle-and-holder

assemblies on an injection pump test bench: setting for test equipment,

check value for engine equipment.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MAC 12,0 h1 Edition : 18.02.91 Replaces : 14.12.90 Test oil : ISO-4113 Combination no. : 0 402 746 897 Injection pump Pump designation : PES6P120A720RS7200 EP type number : 0 412 726 833 Governor : RQV325...875PA944-12 Governor design. : D 421 815 261 Governer no. Customer—spec. information Customer : MACK TRUCKS : EM7-300 Engine 1st version kW : 224.0 Rated speed : 1750 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 2 417 413 011 Overflow quantity min. 1/h: 160...170 Test nozzle holder : 1 688 901 101 assembly Opening : 207...210 pressure, bar Orifice plate diameter mm : 0,6 Test Lines : 1 680 750 008 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____ BEGINNING OF DELIVERY F₀4

Test pressure, bar: 22...24 Prestroke mm : 3.25...3.35 : (3.20...3.40) Rack travel in mm : 11.00...13.00 Firing order : 1-5-3-6-2-4 : 0-60-120-180-240-300 Phasing Phasing Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rom: 875 Rack travel in mm : 14.00...14.10 Del.quantity cm3/: 25.0...25.2 100 s: (24.7...25.5) Spread cm3 : 0.5100 s: (0.9) 2nd speed rpm : 340.0 Rack travel in mm: 4.6...4.8 Del.quantity cm3/: 3.1...3.7 100 s: (2.9...3.9) Spread ന്ത് : റ.8 100 s: (1.2) (B) Setting of injection pump with governor **GUIDE SLEEVE TRAVEL** 1st speed rpm : 325 : 1.40...1.60 travel mm 2nd speed rpm : 450 3.30...3.70 travel mm 3rd speed 700 rpm : travel mm 7.90...8.30 4th speed 900 rpm : travel mm 9.40...9.60 : 1050 5th speed rpm travel mm : 10.60...11.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 875 Aneroid pressure h: 1200 : 250.0...252.0 Del.quantity 1000 : (247.0...255.0)

: 5.00

1000 : (9.00)

cm3

Spread

RATED SPEED

1st version Control lever

position degrees: 61...69

Testing:

1st rack travel in: 13.00 Speed rpm : 915...965 2nd rack travel in: 4.00

Speed rpm : 1075...1085

4th rack travel in: 1200

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 8...16

Testing:

Speed : 275 rpm -Minimum rack trave: 6.00 rpm : 340 Speed

Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 875

Rack travel in m: 14.00...14.10 2nd speed rpm : 5:0 Rack travel in m: 14.70...14.90

3rd speed rpm : 575

Rack travel in m: 14.70...14.90

4th speed rpm : 450

Rack travel in m: 13.90...14.30

Aneroid/Altitude

Compensator Test

1st version

Setting

: 510 Speed mon hPa : 1200 Pressure

Rack travel mm : 14.70...14.90

Measurement

1/min: 510 Speed

1st pressure hPa : -

Rack travel in m: 8.70...9.10

2nd pressure hPa : 370

Rack travel in m: 10.30...10.40

3rd pressure hPa : 760

Rack travel in m: 13.30...13.70

START CUT-OUT

1/min : 250 (255) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed : 510 rpm

Del.quantity cm3/: 328.0...334.0 1000 s: (325.0...337.0)

cm3 : 8.00Spread

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 875 Del.quantity cm3/ : 199.0...201.0 * 1000 s: (159.5...183.0)

Aneroid pressure h: rpm : 400 Speed

Del.quantity cm3/: 156.0...160.0

1000 s: (154.0...162.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00

rpm : 915...965 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 190.0...230.0

1000 s: (180.0...240.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 340 Rack travel in mm : 4.60...4.80 Del.quantity cm3/: 31.0...37.0 1000 s: (29.0...39.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

: MACK # 313GC5188-P10

Bow dimension:

Sliding-sleeve position = 37.0 mm * This test specification applies only to the engine/nozzle-and-holder assemblies on an injection-pump test

Note remarks

Test sheet : UNI 9,5 i : 27.02.91 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 746 901

Injection pump

Pump designation : PES6P120A720RS7224 EP type number : 0 412 726 840

Governor

Governor design. : RQV275...1100PA975K

: 0 421 815 266 Governer no.

Customer-spec. information Customer : IVECO-UNIC

: 8460,41,406 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 9.00...12.00

Phasing

: 0-60-120-180-240-300

: 1-5-3-6-2-4

Tolerance + - °

Firing order

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 12.40...12.50

Del.quantity cm3/: 23.4...23.6

100 s: (23.1...23.9)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 275.0 2nd speed Rack travel in mm: 5.1...5.5

Del.quantity cm3/: 3.2...3.8

100 s: (2.9...4.1) Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 1145 1st speed

: 10.30...10.50 cravel mm

rpm : 275 2nd speed

: 1.30...1.50 travel mm

rpm : 450 3rd speed

3.40...4.00 travel mm

rpm : 750 4th speed

: 5.90...6.30 rpm : 1350 travel mm

5th speed

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1140 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Aneroid pressure h: 1200

Del.quantity : 234.0...236.0

1000 : (231.0...239.0)

F07

Spread cm3 : 5.00 1000 : (9.00)RATED SPEED 1st version Control Lever position degrees: 115...123 Testina: 1st rack travel in: 11.40 Speed rpm : 1140...1150 2nd rack travel in: 4.00 Speed rpm : 1220...1250 4th rack travel in: 1350 Speed rpm : 0.00...1.00 LOW IDLE 1 Control Lever position degrees: 61...69 Testing: Speed rpm : 100 Minimum rack trave: 6.80 **rpm** : 275 Rack travel in mm : 5.20...5.40 CONSTANT REGULATION rpm : 270...400 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version rom : 1100 1st speed Rack travel in m: 12.40...12.50 rpm : 900 2nd speed Rack travel in m: 12.30...12.60 3rd speed rpm : 700 Rack travel in m: 11.70...11.90 4th speed rpm : 500 Rack travel in m: 11.20...11.50 5th speed rpm : 350 Rack travel in m: 10.80...11.20 Aneroid/Altitude Compensator Test 1st version Setting Speed : 850 rpm hPa : 1200 Pressure

: 12.40...12.50 Rack travel mm

Measurement 1/min: 850 Speed

1st pressure hPa : -Rack travel in m: 7.50...7.70 2nd pressure hPa : 710

Rack travel in m: 11.20...11.30 3rd pressure hPa : 400

Rack travel in m: 8.60...9.00

START CUT-OUT

1/min: 195 (215) Speed

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1200 : 900 Speed rpm

Del.guantity cm3/: 242.0...248.0 1000 s: (239.0...251.0)

Aneroid pressure h: 1200 Speed : 500 rpm

Del.quantity cm3/: 246.0...252.0 1000 s: (243.0...255.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 119.0...121.0 1000 s: (116.0...124.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.40 Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 160.0...190.0 1000 s: (156.0...194.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.10...5.50 Dei.quantity cm3/: 32.0...38.0 1000 s: (29.0...41.0)

Spread cm3 : 8.001000 s: (12.00)

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

F08

Note remarks

Test sheet : UNI 9,5 i 1 : 01.03.91 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 746 902

Injection pump

Pump designation : PES6P120A720RS7224

EP type number : 0 412 726 840

Governor

Governor design. : RQV275...1100PA975-1

: 0 421 815 267 Governer no.

Customer-spec. information Customer : IVECO-UNIC

: 8460.41.320 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 20.9...21.1

100 s: (20.6...21.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 275.02nd speed Rack travel in mm : 5.1...5.5 Del.quantity cm3/: 3.2...3.8

100 s: (2.9...4.1)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1145

: 10.30...10.50 travel mm

2nd speed rpm : 275

: 1.30...1.50 travel mm

3rd speed : 450 rpm

travel mm 3.40...4.00

: 750 4th speed rpm

5.90...6.30 travel mm

1350 5th speed ngn

: 13.00...14.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1140

Speed Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 209.0...214.0)

Prestroke mm

Spread cm3: 5.00 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 115...123

Testing:

1st rack travel in: 10.20

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1200...1230 Speed

4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 64...72

Testing:

Speed rom : 100 Minimum rack trave: 6.80 : 275 rpm

Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

rpm : 270...400 Speed

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

rpm : 1100 1st speed

Rack travel in m: 11.20...11.30

2nd speed rpm : 900

Rack travel in m: 10.70...10.90

3rd speed rpm : 700

Rack travel in m: 9.90...10.10

4th speed rpm : 400

Rack travel in m: 9.30...9.70

Aneroid/Altitude Compensator Test

1st version

Settina

Speed rpm : 1100 hPa : 1200 Pressure

Rack travel mm : 11.20...11.30

Measurement

1/min: 1100 Speed

1st pressure hPa :-

Rack travel in m: 7.70...7.90

2nd pressure hPa : 600

Rack travel in m: 10.60...10.70

3rd pressure hPa : 420

Rack travel in m: 9.10...9.50

START CUT-OUT

1/min: 195 (215) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

: 700 Speed rpm

Del.quantity cm3/: 188.0...194.0 1000 s: (185.0...197.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 120.0...122.0 1000 s: (117.0...125.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20

rpm : 1140...1150 Speed

LOW IDLE

Speed rpm : 275

Rack travel in mm : 5.10...5.50 Del.quantity cm3/: 32.0...38.0

1000 s: (29.0...41.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

: UNI 9,5 i 2 : 01.03.91 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 746 903

Injection pump

Pump designation : PES6P120A720RS7224 EP type number : 0 412 726 840

Governor

Governor design. : RQV275...1100PA888-1

: 0 421 815 268 Governer no.

Customer-spec. information Customer : IVECO-UNIC

Engine : 8460.41.160

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 9.00...12.00

Phasing : 0-60-120-180-240-300

Firing order : 1-5-3-6-2-4

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 22.4...22.6

100 s: (22.1...22.9)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 275.0 Rack travel in mm: 5.2...5.6 Del.quantity cm3/: 3.0...3.6 100 s: (2.7...3.9)

cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

Spread

1st speed rpm : 1145

: 10.10...10.30 rpm : 275 travel mm

2nd speed

travel mm : 1.10...1.30

rpm : 400 3rd speed

: 2.50...3.10 travel mm

4th speed rpm : 750

: 5.50...5.90 travel mm

rpm : 1350 5th speed

: 13.00...14.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1150 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850 Aneroid pressure h: 900

Del.quantity : 224.0...229.0)

: 5.00 cm3Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 117...125 Testing: 1st rack travel in: 10.60 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1200...1230 Speed 4th rack travel in: 1350 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 66...74 Testina: Speed : 100 rpm Minimum rack trave: 6.90 Speed rpm : 275
Rack travel in mm : 5.30...5.50 CONSTANT REGULATION rpm : 270...400 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 850 Rack travel in m: 11.80...11.90 d speed rpm : 1100 Rack travel in m: 11.60...11.80 2nd speed 3rd speed rpm : 700 Rack travel in m: 11.20...11.40 4th speed rpm : 400 Rack travel in m: 10.70...11.00 Aneroid/Altitude Compensator Test 1st version Setting rpm Speed : 850 hPa : 900 Pressure Rack travel mm : 11.80...11.90 Measurement

1/min: 850 Speed 1st pressure hPa : -Rack travel in m: 8.10...8.30 2nd pressure hPa : 640 Rack travel in m: 10.90...11.00 3rd pressure hPa : 400 F12

Rack travel in m: 8.90...9.20 START CUT-OUT 1/min: 195 (215) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 : 1100 Speed rpm Del.quantity cm3/: 210.0...216.0 1000 s: (207.0...219.0) Aneroid pressure h: 900 : 700 Speed rpm Del.quantity cm3/: 220.0...226.0 1000 s: (217.0...229.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 127.0...129.0 1000 s: (124.0...132.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.60 rpm : 1140...1150 Speed LOW IDLE Speed rpm : 275 Rack travel in mm : 5.20...5.60 Del.quantity cm3/: 30.0...36.0 1060 s: (27.0...39.0) Spread cm3 : 8.00 1000 s: (12.00) Remarks: Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Note remarks

Test sheet : MB 11,7 c 3 Edition : 18.02.91 : 19.3.90 Replaces Test oil : ISO-4113

Combination no. : 0 402 776 806

Injection pump

Pump designation : PES6P120A720LS7120 : 0 412 726 803

EP type number

Governor

Governor design. : RSV350...1050P0A529

: 0 421 833 317 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M447 A Engine

1st version kW : 213.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35) Rack travel in mm : 9.00...12.00

: 6-2-4-1-5-3 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 650 1st speed

Rack travel in mm : 14.00...14.20

Del.quantity cm3/: 20.2...20.4

100 s: (19.9...20.7)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 350.02nd speed Rack travel in mm: 5.6...5.8

Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.8 Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650 Aneroid pressure h: 650

: 202.0...204.0 Del.quantity : (199.0...207.0) 1000

: 5.00 cm3

1000 : (9.00)

RATED SPEED

Spread

1st version

Control lever

position degrees: 48...56

Testing: 1st rack travel in: 12.30 rpm : 1080...1085 Speed 2nd rack travel in: 4.00 Speed rpm : 1160...1173 4th rack travel in: 1300 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 22...30 Setting point w/out bumper spring : 350 Speed rpm Rack travel in mm: 5.7 : 350 Speed rpm Rack travel in mm : 5.60...5.80 SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1030 Rack travel in m: 13.30...13.50 : 950 2nd speed rom Rack travel in m: 13.70...13.90 3rd speed rpm : 875 Rack travel in m: 14.20...14.40 4th speed rpm : 750 Rack travel in m: 14.70...14.90 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rom Pressure hPa : 650 Rack travel mm : 14.00...14.20 Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 12.30...12.50 2nd pressure hPa : 400 Rack travel in m: 13.20...13.40 3rd pressure hPa : 850 Rack travel in m: 14.30...14.50 4th pressure hPa : -Rack travel in m: 11.30...11.60 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200

: 1030

rpm

Del.quantity cm3/: 194.0...197.0 1000 s: (191.0...200.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1200 Speed rpm : 750 Del.quantity cm3/ : 219.0...224.0 1000 s: (216.0...227.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm Del.quantity cm3/: 144.0...146.0 1000 s: (141.0...149.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.30 STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 190.0...210.0 1000 s: (186.0...214.0)

Remarks:

F14

Speed

Note remarks

Test sheet : MB 11,7 c 4 : 18.02.91 Edition : 17.9.90 Replaces

Test oil : ISO-4113

Combination no. : 0 402 776 807

Injection pump

Pump designation : PES6P120A720LS7120-2

: 0 412 726 832 EP type number

Governor

: RSV350...1050P0A529 Governor design.

: 0 421 833 332 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M447 A

1st version kW : 213.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30 : (5.15...5.35)
Rack travel in mm : 9.00...12.00

Firing order : 6-2-4-1-5-3

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 14.00...14.20

Del.quantity cm3/: 20.2...20.4

100 s: (19.9...20.7)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 350.0 2nd speed Rack travel in mm: 5.6...5.8 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.8 Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 650 Speed Aneroid pressure h: 650

Del.quantity : 202.0...204.0

1000 : (199.0...207.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

position degrees: 94...106 Testing: 1st rack travel in: 12.40 rpm : 1080...1085 Speed 2nd rack travel in: 4.00 Speed rpm : 1160...1173 4th rack travel in: 1300 rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 72...80 Setting point w/out bumper spring rpm : 350 Rack travel in mm : 5.7 Speed rpm : 350 Rack travel in mm : 5.60...5.80 SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 13.40...13.60 2nd speed rpm : 950 Rack travel in m: 14.00...14.20 3rd speed rpm : 875 Rack travel in m: 14.50...14.70 4th speed rpm : 750 Rack travel in m: 14.90...15.10 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rom hPa : 650 Pressure Rack travel mm : 14.00...14.20 Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 12.30...12.50 2nd pressure hPa : 400 Rack travel in m: 13.20...13.40 3rd pressure hPa : 850 Rack travel in m: 14.30...14.50 4th pressure hPa : -Rack travel in m: 11.30...11.60 FUEL DELIVERY CHARACTERISTICS 1st version F16

Control Lever

Aneroid pressure h: 1200 : 1030 Speed rpm Del.quantity cm3/: 194.0...197.0 1000 s: (191.0...200.0) cm3 : 8.00 1000 s: (12.0) Spread Aneroid pressure h: 1200 Speed rpm : 750 Del.quantity cm3/ : 219.0...224.0 1000 s: (216.0...227.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 144.0...146.0 1000 s: (141.0...149.0) cm3 : 8.00 Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.40

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 190.0...210.0 1000 s: (186.0...214.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

Test sheet : MB 4,0 H 1 Edition : 18.02.91 Replaces

Test oil : ISO-4113

Combination no. : 0 403 444 120

Injection pump

Pump designation : PES4MW100/720RS1151

: 0 413 404 104 EP type number

Governor

Governor design. : RQ300/1300MW105-2

: 0 420 082 051 Governer no.

Customer-spec. information Customer : MB-NFZ

Engine : 0M364A

1st version kW : 87.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 C15

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm : 13001st speed

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 9.8...10.0

100 s: (9.6...10.2)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 6.3...6.5 Del.quantity cm3/: 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1400 1st speed

: 7.30...7.70 travel mm rpm : 1300 2nd speed

cravel mm : 6.10...6.30

rpm : 550 3rd speed

: 5.70...6.30 travel mm

rpm : 300 4th speed

: 2.10...2.50 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: 107

rpm : 800 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 90.0...102.0)

Spread : 3.50

: (6.00) 1000

RATED SPEED

F17

1st version Control Lever 1st version position degrees: 91...99 Aneroid pressure h: 700 Speed rpm : 600 Del.quantity cm3/: 87.0...90.0 1000 s: (84.5...92.5) Setting point: Speed rpm Rack travel in mm: 20.0 Spread cm3 : 5.00 1000 s: (7.0) Testing: Aneroid pressure h: -1st rack travel in: 11.30 rpm : 500 Speed Del.quantity cm3/: 59.0...61.0 rpm : 1345...1360 Speed 2nd rack travel in: 4.00 1000 s: (57.0...63.0) rpm : 1440...1470 Speed 4th rack travel in: 1550 rpm : 0.00...1.00Speed BREAKAWAY LOW IDLE 1 1st version Control Lever 1mm rack travel less than position degrees: 72...80 Setting point w/out bumper spring full load rack tr: 11.30 rpm : 300 Speed rpm : 1345...1360 Rack travel in mm: 6.4 STARTING FUEL DELIVERY Testing: Speed : 200 rpm Minimum rack trave: 8.00 Speed : 100 rpm Del.quantity cm3/: 90.0...100.0 1000 s: (87.0...103.0) Speed : 300 rpm Rack travel in mm : 6.30...6.50 TORQUE CONTROL LOW IDLE Torque control curve - 1st version 1st speed rpm : 1300 Speed rpm : 300 Rack travel in m: 12.30...12.40 Rack travel in mm : 6.30...6.50 nd speed rpm : 600 Rack travel in m: 12.80...12.90 2nd speed Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) 3rd speed rpm : 1100 cm3 : 3.50Spread Rack travel in m: 12.40...12.70 1000 s: (5.50) Aneroia/Altitude Remarks: Compensator Test 1st version Setting : 500 Speed rpm Pressure hPa : : 11.30...11.40 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 200 Rack travel in m: 11.70...11.80 2nd pressure hPa : 300 Rack travel in m: 12.30...12.60 3rd pressure hPa : 700 Rack travel in m: 12.80...12.90 FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet : MB 4,0 I Edition : 18.02.91

Replaces

Test oil : ISO-4113

Combination no. : 0 403 444 121

Injection pump

Pump designation : PES4MW100/720RS1212

: 0 413 404 114 EP type number

Governor

Governor design. : RQV300...1300MW50-15

: 0 420 083 238 Governer no.

Customer-spec. information Customer : MB-NFZ

Engine : 0M364LA

1st version kW : 102.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina .

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection rump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

F19

Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.20...13.30

Del.guantity cm3/: 10.1...10.3

100 s: (9.9...10.5)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 1.0...1.4

100 s: (0.7...1.6)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1450 1st speed

travel mm : 9.50...9.90

rpm : 13402nd speed

cravel mm : 8.50...8.70

3rd speed rpm : 500

: 2.70...3.30 travel mm

4th speed

rpm : 300 : 1.30...1.70 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1340 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300 Aneroid pressure h: 700

Del.quantity : 101.0...103.0

1000 : (99.0...105.0)

Spread : 3.50 cm3 1000 : (6.00)

RATED SPEED

1st version Control Lever position degrees: 107...115 Testing: 1st rack travel in: 12.20 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 Speed rpm : 1445...1475 4th rack travel in: 1550 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 72...80 Setting point w/out bumper spring rom : 300 Rack travel in mm: 6.5 Testing: Speed rpm : 200 Minimum rack trave: 8.00 rpm : 300 Speed Rack travel in mm : 6.40...6.60 CONSTANT REGULATION Speed rom : 320...550 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom Pressure hPa : -Rack travel mm : 10.10...10.20 Measurement Speed 1/min: 500 1st pressure hPa : 200 Rack travel in m: 10.90...11.10 2nd pressure hPa : 400 Rack travel in m: 12.60...12.80 3rd pressure hPa : 700 Rack travel in m: 13.20...13.30 START CUT-OUT Speed i/min: 200 (230) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700

Speed rpm : 600 Del.quantity cm3/: 86.0...89.0

1000 s: (83.5...91.5)

Spread cm3 : 5.001000 s: (7.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 36.0...38.0 1000 s: (34.0...40.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.20 rpm : 1340...1350 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 85.0...95.0 1000 s: (82.0...98.0) LOW IDLE rpm : 300 Speed Rack travel in mm : 6.40...6.60 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) cm3 : 3.50Spread 1000 s: (5.50) Remarks:

F20

Note remarks

Test sheet : MB 4,0 H Edition : 18.02.91 Replaces

Test oil

: ISO-4113

Combination no. : 0 403 444 122

Injection pump

Pump designation : PES4MW100/720RS1151

EP type number : 0 413 404 104

Governor

Governor design. : RQV300...1200MW50-14

Governer no. : 0 420 083 239

Customer-spec. information Customer : MB-NF7

Engine : 0M364A

: 77.0 1st version kW Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening 1

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 8.6...8.8

100 s: (8.4...9.0)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.0 2nd speed Rack travel in mm: 6.3...6.5 Del.quantity cm3/: 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350 : 8.50...8.90 travel mm

2nd speed rpm : 1250

cravel mm : 7.60...7.80

rpm : 500 3rd speed

travel mm : 2.70...3.30

rpm : 300 4th speed

: 1.20...1.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1250 Speed

Rack travel in mm: 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm · 1200 Aneroid pressure h: 700

Del.quantity : 80.0...90.0)

: 3.50 Spread cm3 1000 : (6.00)

RATED SPEED

1st version Control lever position degrees: 105...113 1st version Aneroid pressure h: 700 Testina: : 600 Speed rpm Del.quantity cm3/: 79.0...82.0 1000 s: (76.5...84.5) Spread cm3 : 5.00 1st rack travel in: 9.80 rpm : 1250...1260 Speed 2nd rack travel in: 4.00 Speed rpm : 1350...1380 4th rack travel in: 1450 1000 s: (7.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 46.0...48.0 Speed rpm : 0.00...1.00LOW IDLE 1 1000 s: (44.0...50.0) Control lever position degrees: 75...83 Setting point w/out bumper spring **BREAKAWAY** rpm : 300 Rack travel in mm: 6.4 1st version 1mm rack travel less than Testing: Speed : 200 full load rack tr: 9.80 rpm Minimum rack trave: 8.00 rpm : 1250...1260 Speed Speed rpm : 300 Rack travel in mm : 6.30...6.50 STARTING FUEL DELIVERY TORQUE CONTROL Dimension a mm : 0.70 Speed : 100 rpm Del.quantity cm3/: 78.0...88.0 Torque control curve - 1st version rpm : 1200 1000 s: (75.0...91.0) 1st speed Rack travel in m: 10.80...10.90 rom : 600 2nd speed LOW IDLE Rack travel in m: 11.50...11.60 3rd speed rpm : 1100 rpm : 300 Speed Rack travel in m: 11.00...11.30 Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 10.0...14.0 Aneroid/Altitude 1000 s: (7.5...16.5) : 3.50 Compensator Test cm3 Sp.read 1000 s: (5.50) 1st version Remarks: Setting : 500 Speed rpm hPa : Pressure : 9.50...9.60 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 300 Rack travel in m: 10.00...10.20 2nd pressure hPa : 450 Rack travel in m: 11.20...11.40

3rd pressure hPa : 700

Rack travel in m: 11.50...11.60 START CUT-OUT 1/min: 200 (230) Speed FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet : MB 4,0 H 3 : 18.02.91 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 403 444 123

Injection pump

Pump designation : PES4MW100/720RS1151

EP type number

: 0 413 404 104

Governor

Governor design. : RQV300...1300MW50-16

: 0 420 083 240 Governer no.

Customer-spec. information Customer : MB-NF7

Engine : 0M364A

1st version kW : 79.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening.

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm

: 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

: 1-3-4-2 Firing order

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 8.2...8.4

100 s: (8.0...8.6)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 300.0 2nd speed Rack travel in mm: 6.3...6.5 Del.quantity cm3/: 1.0...1.4 100 s: (0.7...1.6)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1350 1st speed

8.40...8.80 travel mm

rpm : 880 2nd speed

: 4.90...5.10 cravel mm

3rd speed rpm : 500

travel mm : 2.70...3.30

rpm : 3004th speed

: 1.20...1.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1350 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300 Aneroid pressure h: 700

Del.quantity : 82.0...84.0

1000 : (80.0...86.0)

Spread : 3.50 cm3

1000 : (6.00)

RATED SPEED

1st version Control Lever 1/min : 200 (230) Speed position degrees: 108...116 FUEL DELIVERY CHARACTERISTICS Testina: 1st rack travel in: 9.80 Speed rpm : 1340...1350 1st version 2nd rack travel in: 4.00 Aneroid pressure h: 700 rpm : 1420...1450 Speed : 600 Speed rpm 4th rack travel in: 1500 Del.quantity cm3/: 75.0...78.0 Speed rpm : 0.00...1.001000 s: (72.5...80.5) cm3 : 5.00 Spread LOW IDLE 1 1000 s: (7.0) Control Lever Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 46.0...48.0 1000 s: (44.0...50.0) position degrees: 72...80 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm: 6.4 Testing: **BREAKAWAY** Speed rpm : 200 Minimum rack trave: 8.00 1st version : 300 Speed 1mm rack travel less than rpm Rack travel in mm : 6.30...6.50 Rack travel in mm: 2.00 full load rack tr: 9.80 Speed : 480...540 rom Speed rpm : 1340...1350 TORQUE CONTROL STARTING FUEL DELIVERY Dimension a mm : 0.70 Torque control curve - 1st version rpm : 1300 1st speed : 100 Speed rpm Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0) Rack travel in m: 10.80...10.90 rpm : 600 2nd speed Rack travel in m: 11.90...12.00 3rd speed rpm : 1000 LOW IDLE Rack travel in m: 11.90...12.00 4th speed rpm : 1175 : 300 Speed man Rack travel in m: 11.30...11.50 Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) Aneroid/Altitude Compensator Test cm3 : 3.50Spread 1000 s: (5.50) 1st version Remarks: Setting Speed rpm : 500 hPa : -Pressure : 10.00...10.10 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 200 Rack travel in m: 10.70...10.90 2nd pressure hPa : 300 Rack travel in m: 11.20...11.40 3rd pressure hPa : 700 Rack travel in m: 11.90...12.00 START CUT-OUT

Note remarks

Test sheet : MB 4,0 H 4 Edition : 18.02.91

Replaces

Test oil : ISO-4113

Combination no. : 0 403 444 124

Injection pump

Pump designation : PES4MW100/720RS1151

EP type number : 0 413 404 104

Governor

Governor design. : RQ300/1300MW105-4

Governer no. : 0 420 082 052

Customer-spec. information Customer : MB-NFZ

: 0M364A Engine

1st version kW : 79.0 : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm

: (3.65...3.85) Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2

Phasina : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.80...10.90

Del.guantity cm3/: 8.2...8.4

100 s: (8.0...8.6)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 6.3...6.5 Del.quantity cm3/: 1.0...1.4

100 s: (0.7...1.6)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1400 1st speed

: 7.30...7.70 rpm : 1300 travel mm

2nd speed cravel mm : 6.10...6.30

3rd speed rpm : 425

: 4.80...5.40 travel mm

rpm : 300 4th speed

: 2.10...2.50 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: 107

rpm : 1000 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed Aneroid pressure h: 700

: 82.0...84.0 Del.quantity

1000 : (80.0...86.0)

cm3 : 3.50 1000 : (6.00) Spread

RATED SPEED

1st version Control Lever position degrees: 89...97 Setting point: rpm : 1000 Rack travel in mm: 20.0 Testing: 1st rack travel in: 9.80 rpm : 1340...1355 2nd rack travel in: 4.00 Speed rpm : 1425...1455 4th rack travel in: 1500 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 72...80 Setting point w/out bumper spring rpm : 300° Rack travel in mm: 6.4 Testina: rpm : 200 Speed Minimum rack trave: 8.00 rpm : 300 Speed Rack travel in mm : 6.30...6.50 Rack travel in mm : 2.00 Speed rpm : 390...450 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1300 Rack travel in m: 10.80...10.90 2nd speed rpm : 600 Rack travel in m: 11.90...12.00 3rd speed rpm : 1000 Rack travel in m: 11.90...12.00 4th speed rpm : 1175
Rack travel in m: 11.30...11.50 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : -Pressure Rack travel mm : 10.00...10.10 Measurement Speed 1/min: 500 1st pressure hPa : 200 Rack travel in m: 10.70...10.90 2nd pressure hPa : 300 Rack travel in m: 11.20...11.40

Rack travel in m: 11.90...12.00 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 Speed rpm : 600 Del.quantity cm3/: 75.0...78.0 1000 s: (72.5...80.5) Spread cm3 : 5.00 1000 s: (7.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 46.0...48.0 1000 s: (44.0...50.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.80 Speed rpm : 1340...1355 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) cm3 : 3.50 1000 s: (5.50) Spread Remarks:

3rd pressure hPa : 700

Note remarks

Test sheet : MB 4.0 H 5 Edition : 18.02.91

Replaces

Test oil : ISO-4113

Combination no. : 0 403 444 125

Injection pump

Pump designation : PES4MW100/720RS1151

EP type number : 0 413 404 104

Governor

Governor design. : RQV300...1300MW67-3

: 0 420 083 242 Governer no.

Customer-spec. information Customer : MB-NFZ

Engine : OM 364 LA

1st version kW : 102.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2

Phasina : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.60...12.70

Del.quantity cm3/: 9.8...10.0

100 s: (9.6...10.2)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 300.0 2nd speed Rack travel in mm: 6.8...6.9

Del.quantity cm3/: 1.0...1.4 100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1350 1st speed

: 8.40...8.80 travel mm

2nd speed rpm : 880

cravel mm : 4.90...5.10

rpm : 500 3rd speed travel mm : 2.70...3.30

rpm : 300 4th speed

: 1.20...1.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1340

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300 Aneroid pressure h: 700

: 98.0...100.0 Del.quantity

1000 : (96.0...102.0)

: 3.50 Spread cm3 1000 : (6.00)

RATED SPEED

1st version Control Lever position degrees: 117...125 Testing: 1st rack travel in: 11.60 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 rpm : 1445...1475 Speed 4th rack travel in: 1550 rpm : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 83...91 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.8 Testina: : 200 Speed rpm Minimum rack trave: 8.50 : 300 Speed rom Rack travel in mm : 6.80...6.90 CONSTANT REGULATION rpm : 320...550 Speed Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 200 Pressure Rack travel mm : 11.30...11.40 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.50...10.60 2nd pressure hPa : 335 Rack travel in m: 12.10...12.40 3rd pressure hPa : 700 Rack travel in m: 12.60...12.70 START CUT-OUT 1/min: 220 (250) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 rpm: : 600 Speed Del.quantity cm3/: 82.5...85.5 1000 s: (80.0...88.5)

cm3 : 5.00Spread 1000 s: (7.0) Aneroid pressure h: 700 : 1300 Speed rpm Del.quantity cm3/: 66.0...68.0 1000 s: (64.0...70.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 49.0...51.0 1000 s: (47.0...53.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.60 rom : 1340...1350 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed Del.quantity cm3/: 85.0...95.0 1000 s: (82.0...98.0)

LOW IDLE

rpm : 300 Speed Rack travel in mm : 6.80...6.90 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

Note remarks

: MB 6,0 D 71 : 01.03.91 Test sheet Edition Replaces : 16.11.90 Test oil : ISO-4113

: 0 403 446 226 Combination no.

Injection pump

Pump designation: PES6MW100/720RS1131-

EP type number : 0 413 406 165

Governor

Governor design. : RQ300/1300MW105 : 0 420 082 039 Governer no.

Customer-spec. information : MB-NFZ Customer

Engine : 0M366LA

1st version kW : 177.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina .

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70

: (3.55...3.75)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 14.40...14.50

Del.quantity cm3/: 11.4...11.6

100 s: (11.2...11.8)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 6.3...6.5 Del.quantity cm3/: 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

: 9.40...9.80 travel mm

2nJ speed rpm : 1360travel mm : 7.20...7.40

rpm : 550 3rd speed

travel mm : 4.20...4.80

rpm : 300 4th speed

: 1.30...1.70 travel imm

GUIDE SLEEVE POSITION

Control-lever position

Degree: 107

rpm : 1000 Speed

Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300Aneroid pressure h: 1000

Del.quantity : 114.0...116.0

1000 : (112.0...118.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever Setting point:

position degrees: 101...109

Speed rpm : 1000 Rack travel in mm: 15.5

Testina:

1st rack travel in: 13.40 Speed rpm : 1345...1360 2nd rack travel in: 4.00

rpm : 1450...1480 Speed

4th rack travel in: 1550

Speed rem : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 70...78

Setting point w/out bumper spring

: 300 rpm Rack travel in mm: 6.4

Testing:

rpm : 100 Speed Minimum rack trave: 9.00 Speed rpm : 300

Rack travel in mm : 6.30...6.50

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rpm hPa : -Pressure

Rack travel mm : 10.60...10.70

Measurement

1/min: 500 Speed

1st pressure hPa : 200

Rack travel in m: 10.90...11.10

2nd pressure hPa : 500

Rack travel in m: 13.50...13.70

3rd pressure hPa : 1000

Rack travel in m: 14.40...14.50

START CUT-OUT

1/min: 180 (200) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 rpm : 750 Speed

Del.guantity cm3/: 106.5...109.5

1000 s: (104.0...112.0)

Spread cm3 : 5.001000 s: (7.0)

Aneroid pressure h: -

Speed rpm: 500 Del.quantity cm3/: 41.0...43.0 1000 s: (39.0...45.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.40

rpm : 1345...1360 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 100.0...110.0

1000 s: (97.0...113.0)

LOW IDLE

rpm : 300 Speed

Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 10.0...14.0

1000 s: (7.5...16.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

GOS

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : RVI 8,8 \$ 3 : 18.02.91 Edition : 02.05.90 Replaces Test oil : ISO-4113 Combination no. : 0 403 446 235 Injection pump Pump designation : PES6MW100/320RS1171 EP type number : 0 413 406 156 Governor Governor design. : RQV300...1300MW80-5 : 0 420 083 197 Governer no. Customer-spec, information Customer : RVI Engine : MIDS 060212B 1st version kW : 113.0 Rated speed : 2600 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 033 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 101 assembly Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,6 Test Lines : 1 680 750 008 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600

(A) Injection pump setting values

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Insp. values in parentheses

: 3.00...3.10 Prestroke m : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 : 0.50 (0.75) Tolerance + - • BASIC SETTING 1st speed rpm: 1300 Rack travel in mm : 10.80...10.90 Del.quantity cm3/: 8.8...9.0 100 s: (8.6...9.2) Spread cm3 : 0.3100 s: (0.6) rpm : 300.02nd speed Rack travel in mm : 5.40...5.80 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2) cm3 : 0.3Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 1500 : 8.70...9.10 travel mm rpm : 1350 2nd speed travel mm : 7.60...7.80 rpm : 500 3rd speed : 2.80...3.40 travel mm rpm : 300 4th speed : 1.20...1.60 travel mm FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1300 Speed Aneroid pressure h: 700 Del.quantity : 88.0...90.0 1000 : (86.0...92.0) : 3.50 Spread cm3 1000 : (6.00) RATED SPEED 1st version

Control lever

position degrees: 60...68

Testing:

1st rack travel in: 9.80

rpm : 1390...1400 Speed

2nd rack travel in: 4.00

rpm : 1505...1535 Speed

4th rack travel in: 1700

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 10...18

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 5.2

Testing:

Speed rpm : 200

Minimum rack trave: 7.00

rpm : 300 Rack travel in mm : 5.40...5.80

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed : 500 rpm

Pressure hPa :

Rack travel mm : 8.70...8.80

Measurement

1/min: 500 Speed

1st pressure hPa : 100

Rack travel in m: 9.30...9.40

2nd pressure hPa : 200

Rack travel in m: 10.20...10.50

3rd pressure hPa : 700

Rar' travel in m: 10.80...10.90

START CUT-OUT

Speed 1/min: 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed : 900 rpm

Del.quantity cm3/: 86.0...89.0 1000 s: (83.5...91.5)

cm3 : 5.00 Spread

1000 s: (7.0)

Aneroid pressure h: -

: 500 Speed mon

Del.quantity cm3/: 44.0...46.0 1000 s: (42.0...48.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.80

Speed rpm : 1390...1400

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 90.0...110.0 1000 s: (87.0...113.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

: 300 Speed rpm

Rack travel in mm : 5.40...5.80

Del.quantity cm3/: 16.0...20.0

1000 s: (13.5...22.5)

Spread cm3 : 3.501000 s: (5.50)

Remarks:

Start-of-delivery mark mode with prestroke 3.00...3.10 mm at barrel 1

G04

Note remarks

Test sheet : KHD 6,1 V Edition : 18.02.91 Replaces : 14.09.90 : ISO-4113 Test oil

Combination no. : 0 403 446 247

Injection pump

Pump designation: PES6MW100/720RS1195

EP type number : 0 413 406 183

Governor

Governor design. : RQV300...1150MW107

Governer no. : 0 420 083 208

Customer-spec. information Customer : KHD

Engine : BF 6L 913 C

: 101.0 1st version kW Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10 : (3.95...4.15)

Rack travel in mm: 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 9.70...9.80

Del.quantity cm3/: 8.4...8.6

100 s: (8.2...8.8)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 315.0 Rack travel in mm : 7.5...7.7

Del.quantity cm3/: 1.3...1.7 100 s: (1.0...1.9)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 12001st speed

: 9.80...10.20 cravel mm

rpm : 800 2nd speed

travel mm : 5.90...6.10

3rd speed rpm : 450

travel mm : 3.00...3.60

rpm : 300 4th speed

travel mm : 1.60...2.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1220 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150 Aneroid pressure h: 1000

Del.quantity : 84.0...86.0

1000 : (82.0...88.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 8.70

rpm : 1180...1190 Speed

2nd rack travel in: 4.00

Speed rpm : 1230...1260

4th rack travel in: 1300

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 13...21

Setting point w/out bumper spring

rpm : 315 Speed Rack travel in mm: 7.6

Testing:

Speed rpm : 100 Minimum rack trave: 9.00

Speed rpm : 315 Rack travel in mm : 7.50...7.70

Rack travel in mm : 2.00 : 420...480 Speed

rom

TORQUE CONTROL

Dimension a mm : 0.75

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 9.70...9.80

2nd speed rpm : 800

Rack travel in m: 10.30...10.50 3rd speed rpm : 1030 Rack travel in m: 10.00...10.20

Aneroid/Altitude

Compensator Test

1st version

Setting

: 500 Speed rpm Pressure hPa : -

Rack travel mm : 10.00...10.20

Measurement

1/min: 500 Speed

2nd pressure hPa : 450 Rack travel in m: 10.20...10.30

3rd pressure hPa : 1000

Rack travel in m: 10.30...10.50

START CUT-OUT

1/min: 230 (250) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm: 800 Del.quantity cm3/: 86.0...89.0 1000 s: (83.5...91.5)

cm3 : 5.00Spread

1000 s: (7.0)

Aneroid pressure h: -

rpm : 500 Speed Del.quantity cm3/: 69.0...71.0

1000 s: (67.0...73.0)

BREAKAWAY

1st version

imm rack travel less than

full load rack tr: 8.70

Speed rpm : 1180...1190

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 110.0...130.0

1000 s: (107.0...133.0)

LOW IDLE

Speed rpm : 315 Rack travel in mm : 7.50...7.70 Del.quantity cm3/ : 13.0...17.0

1000 s: (10.5...19.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

Test electrically-released starting quantity (EES) with 12 volts

Note remarks

Test sheet : MB 6,0 D 65 : 01.03.91 Edition : 16.11.90 Replaces Test oil : ISO-4113

Combination no. : 0 403 446 259

Injection pump

Pump designation : PES6MW100/720RS1131-

EP type number : 0 413 406 165

Governor

Governor design. : RQV300...1300MW68-2

: 0 420 083 224 Governer no.

Customer-spec. information Customer : MB-NFZ

: 0M366LA Engine

1st version kW : 177.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening.

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.60...3.70 Prestroke mm

: (3.55...3.75)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 14.40...14.50

Del.quantity cm3/: 11.4...11.6

100 s: (11.2...11.8)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 6.3...6.5 Del.quantity cm3/: 1.0...1.4

100 s: (0.7...1.6)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

: 9.40...9.80 travel mm

2nJ speed rpm : 1350

: 8.40...8.60 travel mm

3rd speed : 600 rpm

: 3.90...4.50 travel mm

rpm : 300 4th speed

: 0.80...1.20 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1350 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300Aneroid pressure h: 1000

Anerus F. Del.quantity 1000 : 114.0...116.0 : (112.0...118.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

G07

1st version Control Lever Testing: Speed

position degrees: 116...124

1st rack travel in: 13.40 rpm : 1340...1350

2nd rack travel in: 4.00

rpm : 1480...1510 Speed 4th rack travel in: 1600

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 78...86 Setting point w/out bumper spring

rom Rack travel in mm: 6.4

Testing:

Speed : 100 rpm Minimum rack trave: 9.00 rpm : 300 Speed

Rack travel in mm : 6.30...6.50

Aneroid/Altitude Compensator Test

1st version Settina

Speed : 500 rpm Pressure hPa : -

Rack travel mm : 10.60...10.70

Measurement

1/min: 500 Speed

1st pressure hPa : 200

Rack travel in m: 11.50...11.70

d pressure hPa : 400

Rack travel in m: 13.30...13.50

3rd pressure hPa : 1000

Rack travel in m: 14.40...14.50

START CUT-OUT

Speed 1/min: 180 (200)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 : 750 Speed rpm

Del.quantity cm3/: 106.5...109.5 1000 s: (104.0...112.0)

cm3 : 5.00 1000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 41.0...43.0 1000 s: (39.0...45.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.40

rpm : 1340...1350 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 100.0...110.0 1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300

Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5)

cm3 : 3.50Spread 1000 s: (5.50)

Remarks:

Spread

Note remarks

Test sheet : MB 6,1 A
Edition : 18.02.91
Replaces : 05.11.90
Test oil : ISO-4113

Combination no. : 0 403 446 271

Injection pump

Pump designation : PES6MW100/720RS1144 EP type number : 0 413 406 138

Governor

Governor design. : RQV300...1300MW50-11

Governer no. : 0 420 083 235

Customer—spec. information Customer : MB-NFZ

Engine : OM366A

1st version kW : 129.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 11.40...11.50

Del.quantity cm3/: 7.8...8.0

100 s: (7.6...8.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 8.4...8.6 Del.quantity cm3/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm3 : 0.3 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450 travel mm : 9.10...9.50

2nd speed rom: 1345

: 8.20...8.40

3rd speed rpm : 500

travel mm : 3.80...4.40

4th speed rpm : 300

travel mm : 1.10...1.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm: 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300 Aneroid pressure h: 900

Del.quantity : 78.0...80.0

1000 : (76.0...82.0)

Spread cm3 : 3.50 1000 : (6.00)

RATED SPEED

G09

1st version Control lever position degrees: 110...118 Testing: 1st rack travel in: 10.40 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 Speed rpm : 1440...1470 4th rack travel in: 1550 rom : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 81...89 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 8.5 Minimum rack trave: 10.00 rpm : 300 Speed Rack travel in mm : 8.40...8.60 CONSTANT REGULATION rpm : 330...500 Speed TORQUE CONTROL Dimension a mm : 0.80 Torque control curve - 1st version rpm : 1300 1st speed Rack travel in m: 11.40...11.50 rpm : 600 2nd speed Rack travel in m: 12.20...12.30 3rd speed rpm : 900 Rack travel in m: 11.80...12.00 Ameroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : Pressure : 10.50...10.60 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 225 Rack travel in m: 11.20...11.40 2nd pressure hPa : 325 Rack travel in m: 11.90...12.10 3rd pressure hPa : 900 Rack travel in m: 12.20...12.30 START CUT-OUT 1/min: 230 (250) Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.40 Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 8.40...8.60
Del.quantity cm3/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

G10

FUEL DELIVERY CHARACTERISTICS

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 6,1 B 1 : 16.01.91 Edition Replaces : 23.11.90 Test oil : ISO-4113 Combination no. : 0 403 446 272 Injection pump Pump designation : PES6MW100/720RS1131-EP type number : 0 413 406 165 Governor Governor design. : RQ300/1300MW105-1 Governer no. : 0 420 082 048 Customer-spec. information Customer : MB-NFZ Engine : 0M366LA 1st version kW : 155.0 Rated speed : 2600 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening. pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 : 0-60-120-180-240-300 Phasing Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm : 1300Rack travel in mm : 13.10...13.20 Del.quantity cm3/ : 9.8...10.0 100 s: (9.6...10.2) Spread cm3 : 0.3100 s: (0.6) rpm : 300.02nd speed Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 1.0...1.4 100 s: (0.7...1.6) cm3 : 0.3Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 1450 1st speed : 9.50...9.90 travel mm 2nJ speed rpm : 1360 travel mm : 7.30...7.50 : 550 3rd speed rpm travel mm : 4.20...4.80 : 300 4th speed rpm : 1.30...1.70 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: 102 rpm : 1200 Speed Rack travel in mm : 14.70...16.30 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1300 Aneroid pressure h: 1000 Anerois ... Del.quantity 1000 : 98.0...100.0 : (96.0...102.0) : 3.50 Spread cm31000 : (6.00)

RATED SPEED

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 30...32

: 3.60...3.70

: (3.55...3.75)

1st version Control lever position degrees: 99...107 Setting point: Speed rom : 1200 Rack travel in mm: 15.5 Testing: 1st rack travel in: 12.10 Speed rpm : 1345...1360 2nd rack travel in: 4.00 rpm : 1435...1465 Speed 4th rack travel in: 1550 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 70...78 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.5 Testina: Speed rpm : 200 Minimum rack trave: 8.00 rpm : 300 Speed Rack travel in mm : 6.40...6.60 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : -Pressure : 10.30...10.40 Rack travel mm Measurement Speed 1/min : 500 1st pressure hPa : 200 Rack travel in m: 11.20...11.30 2nd pressure hPa : 350 Rack travel in m: 12.40...12.70 3rd pressure hPa : 1000 Rack travel in m: 13.10...13.20 START CUT-OUT Speed 1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

rpm : 750

Aneroid pressure h: 1000

Del.quantity cm3/: 87.0...91.0 1000 s: (85.0...93.0) Spread cm3 : 5.001000 s: (7.0) Aneroid pressure h: -Speed rpm Del.quantity cm3/: 36.0...38.0 1000 s: (34.0...40.0) **BRFAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.10 rpm : 1345...1360 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 100.0...110.0 1000 s: (97.0...113.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 6.40...6.60 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) cm3 : 3.50Spread 1000 s: (5.50) Remarks:

Speed

1st version

Note remarks

Test sheet : MB 6,1 D 2 : 18.02.91 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 403 446 276

Injection pump

Pump designation : PES6MW100/720RS1131

EP type number : 0 413 406 123

Governor

Governor design. : RQV300...1200MW50-18

: 0 420 083 243 Governer no.

Customer-spec. information Customer : MB-NFZ

Engine : OM 366 A

: 115.0 1st version kW Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 715 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm : (3.65...3.75)

Rack travel in mm : 9.00...12.00

Phasing

Firing order

: 0-60-120-180-240-300

: 1-5-3-6-2-4

Tolerance + - °

: 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.20...10.30

Del.quantity cm3/: 8.4...8.6

100 s: (8.2...8.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 5.6...5.8 Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1250 1st speed

: 7.40...7.80 travel mm 2nd speed rpm : 880

travel mm : 4.90...5.10

rpm : 500 3rd speed

: 2.70...3.10 travel mm rpm : 300 4th speed

: 1.20...1.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1250 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed Aneroid pressure h: 700

: 84.0...86.0 Del.quantity 1000 : (82.0...88.0)

cm3 : 3.50 Spread

1000 : (6.00)

RATED SPEED

G13

1st version Control lever position degrees: 105...113 Testing: 1st rack travel in: 9.20 rpm : 1240...1250 Speed 2nd rack travel in: 4.00 Speed rpm : 1335...1365 4th rack travel in: 1450 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 73...81 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 5.7 Testina: Speed rpm : 200 Minimum rack trave: 7.50 Speed rpm : 300 Rack travel in mm : 5.60...5.80 Rack travel in mm : 2.00 : 410...470 Speed rom TORQUE CONTROL Dimension a mm : 0.90 Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 10.20...10.30 rpm : 600 2nd speed Rack travel in m: 11.10...11.20 3rd speed : 1100 rpm Rack travel in m: 10.30...10.60 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 man hPa : 200 Pressure Rack travel mm : 8.90...9.00 Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 8.60...8.70 2nd pressure hPa : 350 Rack travel in m: 10.20...10.50 3rd pressure hPa : 700 Rack travel in m: 11.10...11.20 START CUT-OUT Speed 1/min: 200 (230)

FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 Speed rpm : 600 Del.quantity cm3/ : 78.0...81.0 1000 s: (75.5...83.5) cm3 : 5.00 Spread 1000 s: (7.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 44.0...46.0 1000 s: (42.0...48.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.20 Speed rpm : 1240...1250 STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 5.60...5.80 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) cm3 : 3.50Spread 1000 s: (5.50) Remarks:

G14

Note remarks

Test sheet : KHD 6,1 N 8 Edition : 18.02.91 Replaces : 12.08.88 Test oil : ISO-4113

Combination no. : 0 403 446 277

Injection pump

Pump designation : PES6MW100/720RS1133 : 0 413 406 126

EP type number

Governor

Governor design. : RQV300...1325MW114 : 0 420 083 241

Customer-spec. information Customer : KHD

Engine : BF 6L 913

1st version kW Rated speed : 2650

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.50...3.60 Prestroke mm

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Governer no.

: 124.0

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1375 1st speed

: 10.00...10.40 travel mm

2nd speed 975 rom

: 6.50...6.70 travel mm

3rd speed rpm

: 575 : 3.10...3.70 travel mm

: 300 4th speed rpm

: 0.50...0.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1225 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1325 Speed Aneroid pressure h: 900

Del.quantity : 101.0...103.0

1000 : (99.0...105.0)

: 3.50 cm3 Spread 1000 : (6.00)

RATED SPEED

G15

: 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

Firina order

rpm : 1325 1st speed

Rack travel in mm : 10.50...10.60

Del.quantity cm3/: 10.1...10.3

100 s: (9.9...10.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0Rack travel in mm : 6.8...6.9

Del.quantity cm3/: 1.1...1.5 100 s: (0.9...1.7)

Spread cm3 : 0.3

100 s: (0.5)

1st version Control lever position degrees: 109...117 Testing: 1st rack travel in: 9.50 rpm : 1365...1375 Speed 2nd rack travel in: 4.00 rpm : 1440...1470 Speed 4th rack travel in: 1550 rpm : 0.10...1.00Speed LOW IDLE 1 Control lever position degrees: 75...83 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.8 Testing: Speed rpm : 200 Minimum rack trave: 8.50 : 300 Speed L DW Rack travel in mm : 6.80...6.90 Rack travel in mm : 2.00 Speed : 430...490 rom Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rom hPa : 450 Pressure Rack travel mm : 9.90...10.00 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 8.90...9.00 2nd pressure hPa : 350 Rack travel in m: 9.30...9.60 3rd pressure hPa : 900 Rack travel in m: 10.50...10.60 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

Aneroid pressure h: 900 rpm : 800 Del.quantity cm3/: 93.0...97.0 1000 s: (91.0...99.0)

cm3 : 3.50Spread 1000 s: (7.0) Aneroid pressure h: -Speed rpm: 500 Del.quantity cm3/: 57.0...59.0 1000 s: (55.0...61.0) RACK STOP ADJUSTMENT Speed : 100 rpm **BREAKAWAY**

1st version 1mm rack travel less than full load rack tr: 9.50

Speed rpm : 1365...1375

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 6.80...6.90 Del.quantity cm3/: 11.0...15.0 1000 s: (9.0...17.0) cm3 : 3.50 Spread

1000 s: (5.00)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

Speed

1st version

Note remarks

: MAN 7,2 V 1 Test sheet Edition : 18.02.91

Replaces

Test oil : ISO-4113

Combination no. : 0 403 456 114

Injection pump

Pump designation : PES6M#100/321RS1201

: 0 413 406 190 EP type number

Governor

Governor design. : RQV250...1200MW83-2

Governer no. : 0 420 083 216

Customer-spec. information Customer : MAN

Engine : D 0826 LF02

1st version kW : 169.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60

: (3.45...3.65) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 13.7...13.9

100 s: (13.5...14.1)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 250.0 2nd speed Rack travel in mm : 4.9...5.1 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 1250 1st speed

: 10.50...10.60 travel mm

2nd speed rpm : 810

: 5.90...6.10 travel mm rpm : 500 3rd speed

travel mm

: 3.70...4.30 rpm : 250

4th speed

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1225 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

: 137.0...139.0 Del.quantity

1000 : (135.0...141.0)

: 3.50 cm3 Spread

1000 : (6.00)

G17

RATED SPEED 1st version Control lever position degrees: 120...128 Testing: 1st rack travel in: 11.50 rpm : 1245...1260 Speed 2nd rack travel in: 4.00 Speed rpm : 1300...1330 4th rack travel in: 1400 Speed Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 77...85 Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm: 5.0 Testing: Speed : 100 rpm Minimum rack trave: 6.50 Speed rpm Rack travel in mm : 4.90...5.10 CONSTANT REGULATION Speed rpm : 330...420 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : 170 Pressure Rack travel mm : 10.00...10.10 Measurement Speed $1/\min : 500$ 1st pressure hPa : -Rack travel in m: 9.70...9.80 2nd pressure hPa : 550 Rack travel in m: 11.90...12.20 3rd pressure hPa : 1000 Rack travel in m: 12.50...12.60 START CUT-OUT 1/min: 170 (200) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 Speed rpm : 600

Dei.quantity cm3/: 135.0...138.0 1000 s: (132.5...140.5) cm3 : 5.00Spread 1000 s: (7.0) Aneroid pressure h: 1000 Speed rpm : 800 Del.quantity cm3/ : 138.0...141.0 1000 s: (135.5...143.5) Aneroid pressure h: 1000 Speed : 1200 rpm Del.quantity cm3/: 136.0...139.0 1000 s: (133.5...141.5) Aneroid pressure h: rpm Del.quantity cm3/: 74.0...76.0 1000 s: (72.0...78.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.50 Speed rpm : 1245...1260 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 130.0...140.0 1000 s: (127.0...143.0) LOW IDLE Speed rpm : 250 Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) cm3 : 3.50Spread 1000 s: (5.50) Remarks: : MAN #3-7135 Start-of-delivery mark is at start of delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 4,0 J : 18.02.91 Edition Replaces Test oil : ISO-4113 Combination no. : 0 403 474 013 Injection pump Pump designation : PES4MW100/720RS1127 EP type number : 0 413 404 103 Governor Governor design. -8: 0 420 085 167 Governer no. Customer-spec, information Customer : MB-NFZ Engine : OM 364 A 1st version kW : 84.0 Rated speed : 2500 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test mozzle holder : 0 681 343 009 assembly Openina pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00X1.50X600 (A) Injection pump setting values Insp. values in parentheses

: RSV750...1250MW0A318 Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 30...32 Prestroke mm : 3.70...3.80 : (3.65...3.85)

Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2Phasing : 0-90-180-270 Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm : 1230Rack travel in mm : 12.40...12.50 Del.quantity cm3/: 8.4...8.6 100 s: (8.2...8.8) cm3 : 0.3Spread 100 s: (0.6) rpm : 750.0 2nd speed Rack travel in mm : 6.7...7.3 Del.quantity cm3/: 0.9...1.3 100 s: (0.6...1.5) Spread cm3 : 0.3100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...1.00 Go/ernor spring pre-tension Click setting x : 2.30FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1230 Speed : 84.0...86.0 Del.quantity 1000 : (82.0...88.0) cm3 : 3.50 1000 : (4.00) Spread RATED SPEED 1st version Control lever position degrees: 88...96 Setting point: Speed : 800 rpm Rack travel in mm: 0.6

Testinc:

1st rack travel in: 11.40

rpm : 1270...1280 Speed 2nd rack travel in: 4.00 rpm : 1295...1315 Speed 4th rack travel in: 1450 Speed rpm : 0.30...1.70 LOW IDLE 1 Control lever position degrees: 72...80 Setting point w/out bumper spring Speed rpm : 750 Rack travel in mm : 7.0 Testing: Speed rpm : 100 Minimum rack trave: 19.00 rpm : 750 Rack travel in mm : 6.70...7.30 Rack travel in mm : 2.00 : 750...810 Speed rpm SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 750 RACK STOP ADJUSTMENT Speed rpm : 100 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.40 Speed rpm : 1270...1280 STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 83.0...93.0 1000 s: (80.0...96,0) LOW IDLE Speed rpm : 750 Rack travel in mm : 6.70...7.30 Del.quantity cm3/: 9.0...13.0 1000 s: (6.5...15.5) Spread cm3 : 3.50 1000 s: (5.50)

G20

Remarks:

Note remarks

Test sheet : LIE 8,4 D
Edition : 18.02.91
Replaces : 17.09.90
Test oil : ISO-4113

Combination no. : 0 403 476 081

Injection pump

Pumo designation : PES6MW100/720RS1196

EP type number : 0 413 406 184

Governor

Governor design. : RSV350...1050MWOA338

Governer no. : 0 420 085 138

Customer—spec. information Customer : LIEBHERR

Engine : D 916 T

1st version kW : 170.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 049

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.40...3.50

: (3.35...3.55)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 13.3...13.5

100 s: (13.1...13.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 425.0 Rack travel in mm : 4.8...5.2 Del.quantity cm3/: 1.4...1.8

100 s: (1.1...2.0)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Speed Degree: -3 rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1050 Aneroid pressure h: 750

Del.quantity : 133.0...135.0 1000 : (131.0...137.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 98...106

Setting point:

Speed rpm : 800 Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.10

rpm : 1070...1080 Speed 2nd rack travel in: 4.00 rpm : 1115...1145 Speed 4th rack travel in: 1200 rpm : 0.30...1.70Speed LOW IDLE 1 Control lever

position degrees: 68...76 Setting point w/out bumper spring : 425 Speed rom

Rack travel in mm: 5.0

Testing: rpm : 100 Speed Minimum rack trave: 19.00

Speed rpm : 425 Rack travel in mm : 4.80...5.20

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

Aneroid/Altitude Compensator Test

1st version Setting : 550 Speed rpm Pressure hPa : -

: 10.70...10.80 Rack travel mm

Measurement

 $1/\min : 550$ Speed

1st pressure hPa : 200

Rack travel in m: 10.90...11.00

2nd pressure hPa : 750

Rack travel in m: 11.10...11.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750 : 500 Speed rpm

Del.quantity cm3/: 125.0...128.0 1000 s: (122.5...130.5)

cm3 : 5.00 Spread 1000 s: (7.0)

Aneroid pressure h: 750 Speed rpm : 800

Del.quantity cm3/: 132.0...135.0 1000 s: (129.5...137.5)

Aneroid pressure h: -

Speed rpm : 550 Del.quantity cm3/: 120.0...122.0 1000 s: (118.0...124.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.10 rpm : 1070...1080 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0) Rack travel in mm: 19.50...21.00

LOW IDLE

Speed : 425 rom

Rack travel in mm : 4.80...5.20 Del.quantity cm3/: 14.0...18.0 1000 s: (11.5...20.5)

cm3 : 3.50 Spread 1000 s: (5.00)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

Note remarks

Test sheet : MB 6,1 C : 18.02.91 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 403 476 098

Injection pump

Pump designation : PES6MW100/720RS1130

EP type number : 0 413 406 122

Governor

Governor design. : RSV350...1075MW0A318

Governer no. : 0 420 085 158

Customer—spec. information

Customer

: MB-NF7

: 0M 366 A Engine

: 111.0 1st version kW Rated speed : 2150

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina .

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 3.70...3.80

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1060

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 7.4...7.6

100 s: (7.2...7.8)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm: 350.0 Rack travel in mm: 7.4...7.6 Del.quantity cm3/: 0.9...1.3

100 s: (0.6...1.5) cm3 : 0.3

Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Go/ernor spring pre-tension

Click setting x : 3.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1060

Del.quantity : 74.0...76.0

1000 : (72.0...78.0) cm3 : 3.50 Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 96...104

Setting point:

Speed : 800 rpm Rack travel in mm: 0.6

Testing: 1st rack travel in: 10.20

G23

rpm : 1100...1110 Speed 2nd rack travel in: 4.00 rpm : 1180...1210 Speed 4th rack travel in: 1300 rpm : 0.30...1.70 Speed LOW IDLE 1 Control lever position degrees: 74...82 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 7.5 Testing: Speed rpm : 100 Minimum rack trave: 19.00 rpm : 350 Rack travel in mm : 7.40...7.60 Rack travel in mm: 2.00 rpm : 450...510 Speed SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 TORQUE CONTROL Dimension a mm : 0.60 Torque control curve - 1st version rpm : 1060 1st speed Rack travel in m: 11.20...11.30 2nd speed rpm : 600 Rack travel in m: 11.80...11.90 3rd speed rpm : 900 Rack travel in m: 11.40...11.60 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 600 Speed Del.quantity cm3/: 61.5...64.5 1000 s: (59.0...67.0) Spread cm3 : 5.001000 s: (7.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.20 rpm : 1100...1110 Speed STARTING FUEL DELIVERY

rpm : 100 Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0) LOW IDLE

Speed rpm : 350 Rack travel in mm : 7.40...7.60 Del.quantity cm3/: 9.0...13.0 1000 s: (6.5...15.5) Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

Speed

Note remarks

Test sheet : PER 6,1 R : 18.02.91 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 403 476 102

Injection pump

Pump designation : PES6MW100/320RS1211 : 0 413 406 202 EP type number

Governor

Governor design. : RSV650...750MW4A311-

: 0 420 085 166 Governer no.

Customer-spec. information : PENTA Customer

Engine : TID 61 AG

1st version kW : 115.0 : 1500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm ; 2.90...3.00

: (2.85...3.05)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 11.20...11.30

Del.guantity cm3/: 12.4...12.6

100 s: (12.2...12.8)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 650.0 2nd speed Rack travel in mm: 6.0...6.5 Del.quantity cm3/: 1.7...2.1

100 s: (1.5...2.2)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm: 0.30...1.00

Governor spring pre-tension Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 124.0...126.0 Del.quantity 1000 : (122.0...128.0) cm3 : 3.50

Spread

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 99...107

Setting point:

rpm Speed Rack travel in mm: 0.6

Testing:

1st rack travel in: 10.20

rpm : 748...753 Speed 2nd rack travel in: 4.00 Speed rpm: 773...788 4th rack travel in: 1000

rom : 0.30...1.70 Speed

LOW IDLE 1 Control lever

position degrees: 91...99

Setting point w/out bumper spring

Speed rpm : 650 Rack travel in mm: 5.2

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 rpm : 650 Speed

Rack travel in mm : 5.00...5.50 Rack travel in mm : 2.00

: 670...730 Speed rpm

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.20 rpm : 748...753 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...160.0 1000 s: (137.0...163.0) Pack travel in mm: 19.00...21.00

LOW IDLE

Speed rpm : 650

Rack travel in mm : 6.00...6.50 Del.quantity cm3/: 17.0...21.0 1000 s: (15.5...22.5)

cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

G26

Note remarks

Test sheet : MWM 3,4 b Edition : 05.03.91 Replaces : 24.11.89 Test oil : ISO-4113

Combination no. : 9 400 083 426

Injection pump

Pump designation: PES4A80D320/3RS1265 : 9 400 083 055 EP type number

Governor

Governor design. : RSV350...1200A2B627R

: 9 420 082 194 Governer no.

Customer-spec. information Customer : MWM

Engine : D225-4

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 012

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.20...2.30 Prestroke mm : (2.15...2.35) Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2 Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 9.40...9.50

Del.quantity cm3/: 5.0...5.1

100 s: (4.9...5.3)

Spread cm3 : 0.2

100 s: (0.4)

rpm : 350.0 2nd speed Rack travel in mm : 6.9...7.1

Del.quantity cm3/: 0.7...1.1

100 s: (0.5...1.3)

Spread cm3 : 0.2100 s: (0.3)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 50.5...51.5

1000 : (49.0...53.0)

cm3 : 2.50 Spread

1000 : (4.00)

RATED SPEED

1st version Control Lever

position degrees: 46...54

Testing:

1st rack travel in: 8.40

rpm : 1240...1250 Speed 2nd rack travel in: 4.00 rpm : 1285...1315 Speed 4th rack travel in: 1400 rpm : 0.30...1.70Speed LOW IDLE 1 Control Lever position degrees: 16...24 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 5.5 Testing: rpm : 100 Speed Minimum rack trave: 19.00 rpm : 350 Rack travel in mm : 5.90...6.10 Rack travel in mm: 2.00 rpm : 490...550 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 9.40...9.50 2nd speed rpm : 500 Rack travel in m: 9.40...9.60 5th speed rpm : 400 Rack travel in m: 10.60...11.20

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.40

rpm : 1240...1250 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm: 350 Rack travel in mm: 5.90...6.10

Remarks:

APPLICATION

Navy

Note remarks

Test sheet : MWM 3,4 b 1 : 05.03.91 Edition Replaces : 24.11.89 Test oil : ISO-4113

Combination no. : 9 400 083 427

Injection pump

Pump designation : PES4A80D320/3RS1265

EP type number : 9 400 083 055

Governor

Governor design. : RSV350...900A7B627R

: 9 420 082 193 Governer no.

Customer-spec, information Customer : MWM

Engine : D225-4

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 012

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 003

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.20...2.30

: (2.15...2.35)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2 Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 10.20...10.30

Del.quantity cm3/: 5.1...5.2

100 s: (5.0...5.4)

Spread cm3 : 0.2

100 s: (0.4)

2nd speed rpm : 350.0 Rack travel in mm: 6.9...7.1

Del.quantity cm3/: 0.6...1.0 100 s: (0.4...1.2)

Spread cm3 : 0.2

100 s: (0.3)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

: 51.5...52.5 Del.quantity

1000 : (50.0...54.0)

Spread cm3 : 2.50

1000 : (4.00)

RATED SPEED

1st version

Control lever

position degrees: 50...58

Testing:

1st rack travel in: 9.20

rpm : 940...945 Speed 2nd rack travel in: 4.00 Speed rpm : 975...980 4th rack travel in: 1100 Speed rpm : 0.30...1.70

LOW IDLE 1 Control lever

position degrees: 19...27 Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm: 5.5

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 rpm : 350 Speed

Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00

Speed rpm : 420...480

TORQUE CONTROL

Torque control curve - 1st version

rpm : 900 1st speed

Rack travel in m: 10.20...10.30

2nd speed rpm : 500

Rack travel in m: 10.20...10.40

5th speed rpm : 400

Rack travel in m: 11.40...12.00

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.20 Speed rpm : 940...945

STARTING FUEL DELIVERY

rpm : 100

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm: 350 Rack travel in mm: 5.90...6.10

Remarks:

APPLICATION

Generator

Note remarks

Test sheet : MWM 5,1 a
Edition : 05.03.91
Replaces : 26.3.90
Test oil : ISO-4113

Combination no. : 9 400 083 429

Injection pump

Pump designation : PES6A80D320/3RS1261 EP type number : 9 400 083 057

Governor

Governor design. : RSV350...900A7B627R

Governer no. : 9 420 082 193

Customer—spec. information Customer : MwM

Engine : 0225-6

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 012

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 003

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.20...2.30 : (2.15...2.35)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference * CS : 4.00...5.00

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 10.20...10.30

Del.quantity cm3/ : 5.1...5.2

100 s: (5.0...5.4)

Spread cm3: 0.2

100 s: (0.4)

2nd speed rpm : 350.0 Rack travel in mm : 6.9...7.1

Del.quantity cm3/: 0.7...1.1

100 s: (0.5...1.3)

Spread cm3 : 0.2

100 s: (0.3)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 900

Del.quantity : 51.5...52.5

1000 : (50.0...54.0)

Spread cm3 : 2.50

1000 : (4.00)

RATED SPEED

1st version Control Lever

position degrees: 50...58

Testing:

1st rack travel in: 9.20

rpm : 940...945 Speed 2nd rack travel in: 4.00 rpm : 975...980 Speed 4th rack travel in: 1100 Speed rpm : 0.30...1.70

LOW IDLE 1 Control Lever

position degrees: 19...27 Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm : 5.5

Testina:

Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 350 Rack travel in mm : 5.90...6.10

Rack travel in mm: 2.00 Speed rpm : 420...480

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 900

Rack travel in m: 10.20...10.30

2nd speed rpm : 500 Rack travel in m: 10.20...10.40

5th speed rpm : 400

Rack travel in m: 11.40...12.00

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.20 rpm : 940...945 Speed

STARTING FUEL DELIVERY

: 100 rpm

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 5.90...6.10

Remarks:

APPLICATION

Generator

Note remarks

Test sheet : FOR 7,8 L Edition : 05.03.91 Replaces : 16.1.91 Test oil : ISO-4113

Combination no. : 9 400 085 324

Injection pump

Pump designation : PES6A95D410RS2801 : 9 400 084 023 EP type number

Governor

Governor design. : RQV350...1300AB1255L

: 9 420 080 294 Governer no.

Customer-spec. information Customer : FNH

Engine : 7.8 L - TC

: 158.0 1st version kW Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.15...3.25 : (3.10...3.30)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack tray. m: 9.00...12.00

& maximum rack tra: 21.00

Difference ° CS : 2.00...3.00

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 13.40...13.50

Del.quantity cm3/: 10.6...10.8

100 s: (10.3...11.0)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 350.0 2nd speed Rack travel in mm: 6.5...6.7 Del.quantity cm3/: 1.1...1.7

100 s: (0.9...1.8)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1450 1st speed

travel mm : 8.50...8.60 2nd speed rpm : 350

: 1.10...1.80 travel mm

rpm : 500 3rd speed

: 2.70...3.10 rpm : 700 travel mm

4th speed

: 3.50...3.90 travel mm

rpm : 1000 5th speed

travel mm : 4.90...5.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1390 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version 2nd pressure hPa : 410 Speed rpm : 1300 Rack travel in m: 12.20...12.40 Aneroid pressure h: 1000 3rd pressure hPa : 610 Del.quantity : 106.0...108.0 Rack travel in m: 13.00...13.10 1000 : (103.5...110.5) : 3.50 Spread cm3START CUT-OUT 1000 : (6.00)1/min: 290 (310) Speed RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control lever position degrees: 111...119 1st version Aneroid pressure h: 1000 Testing: Speed rpm : 850 Del.quantity cm3/: 107.0...110.0 1st rack travel in: 12.40 rpm : 1340...1350 Speed 1000 s: (104.5...112.5) 2nd rack travel in: 4.00 : 1050 rpm Del.quantity cm3/: 106.0...109.0 1000 s: (103.5...111.5) rpm : 1485...1515 Speed 4th rack travel in: 1600 Speed rpm : 0.00...1.00 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 74.0...76.0 1000 s: (71.5...78.5) LOW IDLE 1 Control lever position degrees: 66...74 Testing: BREAKAWAY Speed rpm : 100 Minimum rack trave: 9.00 1st version : 350 Speed **CDM** 1mm rack travel less than Rack travel in mm : 6.50...6.70 full load rack tr: 12.40 CONSTANT REGULATION rpm : 1340...1350 Speed Speed rpm : 350...420 STARTING FUEL DELIVERY TORQUE CONTROL Dimension a mm : 0.40 Torque control curve - 1st version Speed rpm : 100 rpm : 1300 Del.quantity cm3/: 155.0...175.0 1st speed Rack travel in m: 13.40...13.50 1000 s: (152.0...178.0) rpm : 850 2nd speed Rack travel in mm : 19.00...21.00 Rack travel in m: 13.80...13.90 rpm : 1050 4th speed LOW IDLE Rack travel in m: 13.60...13.70 Speed rpm : 350
Rack travel in mm : 6.50...6.70
Del.quantity cm3/ : 11.0...17.0
1000 s: (9.5...18.5) Aneroid/Altitude Compensator Test cm3 : 3.50 Spread 1st version 1000 s: (5.50) Setting : 500 Speed Remarks: rpm hPa : 1000 Pressure : 13.80...13.90 Rack travel mm Set shutoff stop 1.5...2.0 mm before Measurement shutoff. 1/min: 500 Speed 1st pressure hPa : -

Rack travel in m: 11.80...12.10

Note remarks

Test sheet : MB 11,8 n : 05.03.91 Edition Replaces : 8.85 Test oil : ISO-4113

Combination no. : 9 400 087 319

Injection pump

Pump designation : PE6P110A720RS371 EP type number : 0 411 816 123

Governor

Governor design. : RQV300...1050PA747

: 9 420 080 195 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: OM 355 A Engine

1st version kW : 210.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 004

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

H07

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.50...11.60

Del.quantity cm3/: 16.1...16.3

100 s: (15.9...16.5)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 300.02nd speed Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 1.6...2.1 100 s: (1.4...2.3)

Spread cm3 : 0.3

100 s: (0.4)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1070 1st speed

travel mm : 8.50...8.60 rpm : 270 2nd speed

: 0.80...1.20 travel mm

3rd speed rpm : 450

travel mm : 2.80...3.10

4th speed rpm : 800

travel mm : 5.50...5.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1070 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

Del.quantity : 161.0...163.0

1000 : (159.0...165.0)

Spread cm3: 4.00

1000 : (7.50)

RATED SPEED

1st version Control lever position degrees: 99...107 Testina: 1st rack travel in: 10.50 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1150...1180 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 48...56 Testing: rpm : 100 Speed Minimum rack trave: 8.60 Speed rpm: 300 Rack travel in mm : 5.90...6.10 CONSTANT REGULATION Speed rpm : 270...340 START CUT-OUT Speed 1/min: 230 (270) FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500 Del.quantity cm3/: 152.0...156.0 1000 s: (149.0...159.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.50 Speed rpm : 1090...1100 STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 144.0...160.0 1000 s: (140.0...164.0)

Rack travel in mm : 12.70...13.10

Remarks:

80H

Note remarks

Test sheet : MB 10,0 r 2 Edition : 05.03.91

Replaces

Test oil : TSO-4113

Combination no. : 9 400 087 453

Injection pump

Pump designation : PES5P120A720LS7174

: 0 412 725 806 EP type number

Governor

Governor design. : RQV300...1050PA979

: 9 420 080 298 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M449 A Engine

1st version kW : 184.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test Lines

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 1-3-5-4-2

: 0-72-144-216-288 Phasing

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.10...14.30

Del.quantity cm3/: 19.6...19.8

100 s: (19.3...20.1)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 6.7...6.9

Del.quantity cm3/: 1.5...2.1 100 s: (1.2...2.4)

cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

Spread

rpm : 1050 1st speed

: 7.40...7.50 travel mm rpm : 750

2nd speed

: 4.80...5.20 travel mm

3rd speed rpm : 500

: 2.70...3.10 travel mm

rpm : 300 4th speed

travel mm : 1.10...1.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1140

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 650 : 196.0...198.0 Del.quantity 1000 : (193.0...201.0) : 5.00 cm3 Spread 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 112...120 Testing: 1st rack travel in: 14.10 Speed rpm : 1090...1100 2nd rack travel in: 4.00 Speed rpm : 1230...1260 4th rack travel in: 1350 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 66...74 Testina: Speed : 100 rpm Minimum rack trave: 8.50 : 300 rpm Rack travel in mm : 6.70...6.90 CONSTANT REGULATION : 300...370 Speed rom Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm Pressure hPa : 650 Rack travel mm : 14.10...14.30 Measurement 1/min: 600 Speed 1st pressure hPa : 250 Rack travel in m: 12.20...12.40 2nd pressure hPa : 400 Rack travel in m: 13.50...13.70 3rd pressure hPa : 750 Rack travel in m: 14.20...14.30 * 4th pressure hPa : 850 Rack travel in m: 14.60...14.80 5th pressure hPa : -Rack travel in m: 11.80...12.10 START CUT-OUT

1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 1050 Speed rpm

Del.quantity cm3/: 217.5...220.5 1000 s: (214.5...223.5)

cm3 : 8.00 Spread

1000 s: (12.0) Aneroid pressure h: 1200

Speed rpm : 750
Del.quantity cm3/: 218.0...222.0
1000 s: (215.0...225.0)

cm3 : 8.00Spread 1000 s: (12.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 148.0...150.0 1000 s: (145.0...153.0)

cm3 : 8.00Spread 1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.10

Speed rom : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 220.0...240.0

1000 s: (216.0...244.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

H10

Speed

Note remarks

: CUM 8,3 a60 Test sheet : 18.02.91 Edition : 28.9.89 Replaces

: ISO-4113 Test oil

Combination no. : 9 400 230 109

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 030

Governor

: RSV450...1100A0c2190 Governor design.

-41R

: 0 420 233 247 Governer no.

Customer-spec. information Customer : C.D.C.

Engine : 6CT830

1st version kW : 117.1 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

: 0,6 diameter mm

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

H11

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 10.20...10.30

Del.quantity cm3/: 8.9...9.1

100 s: (8.7...9.3)

Spread cm3 : 0.4

100 s: (0.6)

rpm : 450.0 2nd speed

Rack travel in mm: 5.7...5.9 Del.quantity cm3/: 1.4...1.8

100 s: (1.2...2.0)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

: 89.5...91.5 1000 : (87.5...93.5) Del.quantity

: 4.00 Spread cm3

: (6.50) 1000

RATED SPEED

1st version

Control lever

position degrees: 47...55

Testing:

1st rack travel in: 9.20 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1190...1220 Speed 3rd rack travel in: 4.00

Speed rpm : 1195...1225 4th rack travel in: 1300

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 29...37 Setting point w/out bumper spring

rpm : 450 Rack travel in mm: 5.3

Testing:

Speed : 100 rpm Minimum rack trave: 19.00 rpm : 450 Speed

Rack travel in mm : 5.70...5.90

Rack travel in mm : 2.00 : 525...585 Speed rom

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 10.20...10.30 2nd speed rpm : 750

Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

: 750 Speed rprii

Del.quantity cm3/: 88.5...92.5 1000 s: (86.5...94.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.20

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 145.0...165.0

1000 s: (140.0...170.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 450 Rack travel in mm : 5.70...5.90

H12

Del.quantity cm3/: 14.5...18.5 1000 s: (12.5...20.5)

cm3 : 6.00 Spread

1000 s: (8.00)

Remarks:

: C.D.C # 3915683

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Note remarks

Test sheet : CUM 8,3 a61 Edition : 18.02.91 Replaces : 8.8.90 Test oil : ISO-4113

Combination no. : 9 400 230 110

Injection pump

Pump designation : PES6A10Cb320/3RS2691

-4

EP type number : 9 410 230 030

Governor

Governor design. : RSV450...1100A0C2190

-42R

Governer no. : 0 420 233 248

Customer-spec. information Customer : C.D.C.

Engine : 6CT830

1st version kW : 150.6 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Iniet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Phasing

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 12.0...12.2

100 s: (11.8...12.4)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 450.0 Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 1.4...1.8

100 s: (1.2...2.0)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1100

Del.quantity : 120.0...122.0

1000 : (118.0...124.0)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version Control lever

position degrees: 42...50

H13

Testing:

1st rack travel in: 11.10

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1190...1220 Speed

3rd rack travel in: 4.00

rpm : 1195...1225 Speed

4th rack travel in: 1300

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 22...30

Setting point w/out bumper spring

rpm : 450 Speed Rack travel in mm: 5.3

Testing:

Speed rpm : 100

Minimum rack trave: 19.00

rpm : 450

Rack travel in mm : 5.70...5.90

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 12.10...12.20

2nd speed rpm : 750

Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed : 750 rpm

Del.quantity cm3/: 134.0...138.0

1000 s: (132.0...140.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 145.0...165.0

1000 s: (140.0...170.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 450 Rack travel in mm : 5.70...5.90

Del.quantity cm3/: 14.5...18.5 1000 s: (12.5...20.5)

Spread cm3 : 6.00

1000 s: (8.00)

Remarks:

: C.D.C # 3915685

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Start-of-delivery mark 11° cam angle

Adjust stop lever to 0.5...1.0 mm before stop.

after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : CUM 8,3 a62 Edition : 18.02.91 Replaces : 1.2.90 Test oil : ISO-4113 : 9 400 230 111 Combination no. Injection pump Pump designation : PES6A100D320/3RS2691 EP type number : 9 410 230 030 Governor : RSV450...1100A0c2190 Governor design. -40R Governer no. : 0 420 233 246 Customer-spec. information Customer : C.D.C. Engine : 6CT830 1st version kW : 134.2 : 2200 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 101 assembly Opening : 207...210 pressure, bar Orifice plate diameter mm : 0,6 Test lines : 1 680 750 014 Outside diameter x Wall thickness : 6.00X2.00X600 x Length mm (A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

: (2.75...2.95) Rack travel in mm : 10.50 Firing order : 1-5-3-6-2-4 : 0-60-120-180-240-300 Phasing Phasing Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1100 Rack travel in mm : 11.20...11.30 Del.quantity cm3/: 10.3...10.5 100 s: (10.1...10.7) cm3 : 0.4Spread 100 s: (0.6) rpm : 450.0 2nd speed Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 1.4...1.8 100 s: (1.2...2.0) Spread cm3 : 0.6100 s: (0.8) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x :? FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1100 Speed : 103.5...105.5 Del.quantity 1000 : (101.5...107.5) Spread : 4.00 cm3 1000 : (6.50) RATED SPEED 1st version Control lever position degrees: 49...57

Test pressure, bar: 27...29

Prestroke mm

: 2.80...2.90

Testina:

1st rack travel in: 10.20

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1210...1240 Speed

3rd rack travel in: 4.00

rpm : 1215...1245 Speed

4th rack travel in: 1300

rpm : 0.30...1.40 Speed

LOW IDLE 1

Control lever

position degrees: 31...39

Setting point w/out bumper spring

Speed rpm : 450 Rack travel in mm: 5.3

Testing:

rpm : 100 Speed Minimum rack trave: 19.00

rpm : 450

Rack travel in mm : 5.70...5.90

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 11.20...11.30

2nd speed rpm : 750

Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed man

Del.quantity cm3/: 111.5...115.5 1000 s: (109.5...117.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 145.0...165.0 1000 s: (140.0...170.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rom : 450

Rack travel in mm : 5.70...5.90

Del.quantity cm3/: 14.5...18.5

1000 s: (12.5...20.5)

cm3 : 6.00 Spread 1000 s: (8.00)

Remarks:

: C.D.C # 3915684 Start-of-delivery mark 11° cam angle

after start of delivery cyl. 1

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control

Adjust stop lever to 0.5...1.0 mm

before stop.

spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : CUM 8,3 a10 : 18.02.91 Edition : 1.2.90 Replaces Test oil : ISO-4113 Combination no. : 9 400 230 115 Injection pump Pump designation : PES6A100D320/3RS2691 EP type number : 9 410 230 025 Governor Governor design. : RSV400...1250A0c2190 -24R : 9 420 234 178 Governer no. Customer-spec. information Customer : C.D.C. Engine : 6 CTA 8.3 : 131.0 1st version kW : 2500 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 101 assembly Opening. pressure, bar : 207...210 Orifice plate diameter mm : 0,6 Test lines : 1 680 750 014 Outside diameter x Wall thickness : 6.00x2.00x600 x Length mm

(A) Injection pump setting values

per values ____

Test pressure, bar: 27...29

BEGINNING OF DELIVERY

Insp. values in parentheses Set equal delivery quant.

: 2.80...2.90 : (2.75...2.95) Rack travel in mm : 10.50 : 1-5-3-6-2-4 Firing order Phasing : 0-60-120-180-240-300 Tolerance $+ - ^{\circ} : 0.50 (0.75)$ Time to cyl. no. : 1 BASIC SETTING 1st speed rpm : 1250Rack travel in mm : 10.90...11.00 Del.quantity cm3/: 10.3...10.5 100 s: (10.1...10.7) Spread cm3 : 0.4100 s: (0.6) rpm : 400.0 2nd speed Rack travel in mm : 5.3...5.5 Del.quantity cm3/ : 1.2...1.6 100 s: (1.0...1.8) Spread cm3 : 0.6100 s: (0.8) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : ?FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1250 : 103.5...105.5 Del.quantity 1000 : (101.5...107.5) cm3 : 4.00Spread 1000 : (6.50) RATED SPEED 1st version Control lever position degrees: 51...59 Testing:

Prestroke mm

1st rack travel in: 9.90 rpm : 1290...1300 Speed 2nd rack travel in: 4.00 rpm : 1360...1390 Speed 4th rack travel in: 1450 rom : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 26...34 Setting point w/out bumper spring rpm : 400 Rack travel in mm: 4.9 Testing: Speed rpm : 100 Minimum rack trave: 19.00 Speed : 400 rpm Rack travel in mm : 5.30...5.50 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.90 Speed rpm : 1290...1300 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 145.0...165.0 1000 s: (140.0...170.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 400
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 12.5...16.5
1000 s: (10.5...18.5) Spread cm3 : 6.00 1000 s: (8.00) Remarks: : C.D.C # 3915981 Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : CUM 8,3 a 9 Edition : 18.02.91 Replaces : 6.3.90 Test oil : ISO-4113 Combination no. : 9 400 230 116 Injection pump Pump designation : PES6A100D320/3RS2691 EP type number : 9 410 230 025 Governor Governor design. : RSV400...1050A0C2190 -25R : 9 420 234 182 Governer no. Customer spec. information Customer : C.D.C : 6 CT 8.3 Engine 1st version kW : 154.4 Rated speed : 2100 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 101 assembly Opening : 207...210 pressure, bar Orifice plate diameter mm : 0,6 Test lines : 1 680 750 014 Outside diameter x Wall thickness x Length mm : 6.00X2.00X600 (A) Injection pump setting values Insp. values in parentheses

: 2.80...2.90 : (2.75...2.95) Prestroke mm Rack travel in mm : 10.50 : 1-5-3-6-2-4 Firing order Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1050 Rack travel in mm : 12.40...12.50 Del.quantity cm3/: 12.5...12.7 100 s: (12.3...12.9) cm3 : 0.4Spread 100 s: (0.6) rpm : 400.0 2nd speed Rack travel in mm: 5.8...6.0 Del.quantity cm3/: 1.5...1.9 100 s: (1.3...2.1) Spread cm3 : 0.6100 s: (0.8) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : 4.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1050 Speed Del.quantity : 125.5...127.5 1000 : (123.5...129.5) Spread : 4.00 cm3 1000 : (6.50) RATED SPEED 1st version Control lever position degrees: 38...46

Testing:

BEGINNING OF DELIVERY

per values

Test pressure, bar: 27...29

Set equal delivery quant.

1st rack travel in: 11.40 Speed rpm : 1090...1100 2nd rack travel in: 4.00 rpm : 1130...1160 Speed 3rd rack travel in: 4.00 rom : 1135...1165 Speed 4th rack travel in: 1275 Speed rpm : 0.30...1.40LOW IDLE 1 Control Lever position degrees: 19...27 Setting point w/out bumper spring rpm : 400 Rack travel in mm: 5.4 Testing: Speed : 100 mon Minimum rack trave: 19.00 rpm : 400 Speed Rack travel in mm : 5.80...6.00 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.40 rpm : 1090...1100 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 145.0...165.0 1000 s: (140.0...170.0) Rack travel in mm: 19.00...21.00 LOW IDLE rpm : 400 Speed Rack travel in mm : 5.80...6.00 Del.quantity cm3/: 15.5...19.5 1000 s: (13.5...21.5) Spread cm3 : 6.001000 s: (8.00) Remarks: : C.D.C # 3915962

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark at 10° cam rotation angle after start of delivery, cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : CUM 8,3 b 4 Test sheet : 18.02.91 Edition Replaces : 28.9.89 Test oil : ISO-4113

Combination no. : 9 400 230 119

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 028

Governor

Governor design. : RQV350...1250AB1235R

Governer no. : 9 420 231 020

Customer spec. information Customer : C.D.C.

: 6 CT-830 Engine

1st version kW : 157.0 2nd version kW : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 101

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 27...29

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm: 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 12.1...12.3

100 s: (11.9...12.5)

cm3 : 0.4Spread

100 s: (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 5.0...5.2
Del.quantity cm3/ : 1.4...1.8 100 s: (1.2...2.0)

cm3 : 0.6100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

Spread

1st speed rpm : 1400

: 8.40...8.50 travel mm

2nd speed rpm : 1500

: 9.10...9.30 travel mm 3rd speed rpm : 350

: 0.70...1.10 travel mm

4th speed rpm : 450

travel mm : 1.60...2.00

5th speed rpm : 250

: 0.10...0.50 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1550

Rack travel in mm : 6.70...9.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 700 : 121.5...123.5 Del.quantity 1000 : (119.5...125.5) : 4.00 Spread cm3 1000 : (6.50) RATED SPEED 1st version Control Lever position degrees: 41...49 Testing: 1st rack travel in: 10.90 rpm : 1290...1300 2nd rack travel in: 4.00 rpm : 1415...1445 Speed 4th rack travel in: 1500 Speed rom : 0.00...1.00LOW IDLE 1 Control lever position degrees: 9...15 Testina: speed rpm : 250 Minimum rack trave: 7.80 : 350 Speed rom Rack travel in mm : 5.00...5.20 CONSTANT REGULATION rpm : 350...500 Speed TORQUE CONTROL Dimension a mm : 0.50 Torque control curve - 1st version 1st speed rpm : 1250 Rack travel in m: 11.90...12.00 2nd speed rpm : 750 Rack travel in m: 12.30...12.50 3rd speed rpm : 1200 Rack travel in m: 11.90...12.00 4th speed rpm : 800 Rack travel in m: 12.30...12.50 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 700 Pressure Rack travel mm : 12.30...12.50

2nd pressure hPa : 200 Rack travel in m: 9.80...9.90 3rd pressure hPa : 390 Rack travel in m: 11.20...11.60 START CUT-OUT 1/min: 270 (280) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 Speed rpm : 750 Del.quantity cm3/: 132.0...136.0 1000 s: (130.0...138.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 65.5...69.5 1000 s: (63.5...71.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.90 Speed rpm : 1290...1300 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 165.0...185.0 1000 s: (160.0...190.0) Rack travel in mm: 14.60...14.80 LOW IDLE Speed rpm : 350
Rack travel in mm : 5.00...5.20
Del.quantity cm3/ : 14.0...18.0
1000 s: (12.0...20.0) cm3 : 6.00 Spread 1000 s: (8.00) Remarks: : C.D.C. # 3912636

Start-of delivery mark/lock = 7.5° angular displacement of the cam after start of delivery of cylinder 1.

Measurement

1st pressure hPa : -

Speed

1/min: 500

Rack travel in m: 8.70...8.90

BOSCH-INJ.-PUMP TEST SECURICATIONS

Note inst. in remark column

Test scheet : VMA 1,7 A Edition : 18.02.91

replaces

Calibrating oil : ISO-4113

Injection pump : VE3/10F2100L353 : 0 460 403 013 Type number

Customer Part-No. :

Customer-specific information

Customer

Engine : HR 392 SHJ

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assembly

Openina |

Pressure bar: 147.00...150.00

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840

Start of delivery

mm: 0,4 Prestroke

(from BDC): 0,02(0,04)

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1000 Speed Charge press. hPa: 1000

Setting value mm: 2.10...2.50

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1000

Setting value bar: 4.20...4.80

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1500 Speed Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 65.00...66.00

Shutoff

electromagnet Volt: 12 cm3/: 3.0 Dispersion 1000s.: (3.0)

Full-load del. w/out charge press.:

1/min: 750 Speed

Del. quantity cm3/

1000s.: 46.10...47.10

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

1/min: 460 Speed

Del. quantity cm3/ 1000s.: 8.50...12.50

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0

1000s.: (3.0)

Full-load speed regulation

Speed 1/min: 2300 Charge press hPa: 1000

De'. quantity cm3/ 1000s.: 34.00...40.00

Start:

1/min: 100 Speed

Del. quantity cm3/: 35.00...61.00 mind 1000s.: 35.00

mind

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-gty.dif.measurement:

1/min: 1500 Speed Charge press hPa: 1000

cm3/ Inj.-qty.

difference 1000S.: 10.00...12.00

Shutoff

electromagnet Volt: 12 TD-travel dif.measurement

correttore anticipo iniezione (SV)

1/min: 1500 1.Speed Charge press hPa: 1000

TD-travel Supply-pump mm: 0.30...0.50 difference pressure bar: 2.30...2.90 Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 SP press.-dif.measurement pompa di mandata (FP) Overlow quantity at overflow valve: 1. Speed 1/min: 1500 Charge press Supply pump hPa: 1000 1st speed 1/min: 600 Shutoff pressure electromagnet Volt: 12 : 41.70...83.40 quantity cm3/10s: (26.70...98.40) 2nd speed 1/min: 2100 Charge press. hPa: 1000 Shutoff difference bar: 0.10...0.30 Shutoff electromagnet Volt: 12 Inspection pump test specifications Test specifications in parentheses electromagnet Volt: 12 : 55.60...139.00 Overflow cm3/10s: (40.60...154.00) Timing-device characteristic: quantity 2nd speed 1/min: 2100 Delivery-quant. and breakaway char.: Charge press hPa: 1000 mm: 6.10...6.90 TD travel mm: (5.80...7.20) 1nd speed 1/min: 750* Shutoff Charge-air pressure-setting electromagnet Volt: 12 3rd speed 1/min: 1000 hPa: 350 point LDA-stroke mm: 6.2 Charge press hPa: 1000 Shutoff TD travel mm: 2.10...2.50 electromagnet Volt: 12 Del. quantity cm3/: 55.50...56.50 1000S.: (53.50...58.50) 3rd speed 1/min: 2500 Charge press a: 1000 mm: (1.60...3.00) Shutoff electromagnet Volt: 12 Charge press Shutoff 5th speed 1/min: 1900 Charge press. hPa: 1000 electromagnet Volt: 12
Del. quantity cm3/: 0.00...6.00
1000S.: mm: 5.40...6.20 mm: (5.10...6.50) TD travel Shutoff electromagnet Volt: 12 5th speed 1/min: 2300 1/min: 1500 6th speed Charge press. hPa: 1000 Charge press. hPa: 1000 Shutoff electromagnet Volt: 12
Del. quantity cm3/: 34.00...40.00
1000S.: (33.00...41.00)
9th speed 1/min: 2100 mm: 3.90...4.70 TD travel mm: (3.60...5.00)Shutoff electromagnet Volt: 12 Charge press. hPa: 1000 Shutoff Supply-pump pressure characteristic: 1st speed 1/min: 2100 Charge press. hPa: 1000 Supply-pump Charge press. hPa: 1000 Shutoff bar: 7.90...8.50 pressure Shutoff electromagnet Volt: 12
Del. quantity cm3/: 60.50...63.50
1000S.: (59.50...64.50)
12th speed 1/min: 1500 electromagnet Volt: 12 2nd speed 1/min: 1000 Charge press. hPa: 1000 Supply-pump pressure bar: 4.20...4.80 Charge press. hPa: 1000 Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 3rd speed 1/min: 600 Del. quyntity cm3/: 65.00...66.00 1000s.: (63.50...67.50)

18th speed 1/min: Shutoff		‡	TD-travel difference		0.300.50 (0.300.50)
electromagnet Volt: Del. quantity cm3/: 1000s:	46.1047.10 (44.1049.10)	Ī	Shutoff electromagnet V	olt:	12
20th speed 1/min: Shutoff electromagnet Volt: Del. quantity cm3/:	600 12	++++++	SP press.—dif.m pompa di mandat 1st speed 1/2 2nd speed 1/3 Charge press.	a (Ff min: min:	e): - 1500
Mech. shutoff:		+	Supply pump- pressure	:	0.100.30
Electr. shutoff:		+	Shutoff		(0.100.30)
1st speed 1/min: Del. quantity cm3/: 1000s.:		T	electromagnet V Automatic start	ing 1	fuel delivery:
Idle delivery:		+	Shutoff	min:	
1st speed 1/min: Shutoff	460	‡	electromagnet V Del. quantity co 100	m3/:	42.0068.00 (42.0068.00
electromagnet Volt: Del. quantity cm3/:		‡	4th speed 1/1 Shutoff	ໜ້າ:	100
Dispersion cm3/: 1000s.:	3.0 (3.0)	Ī	electromagnet Vendel. quantity of	olt: m3/:	12 35.0061.00
2nd speed 1/min: Shutoff	500	+	100	OS.:	(35.0061.00
electromagnet Volt: Del. quantity cm3/:	12 4.0010.00 (2.0012.00)	+	Shutoff electron Cut-in	magne	et:
3rd speed 1/min: Shutoff		Ŧ	min voltage Rated voltage	:	10,0 12,0
electromagnet Volt: Del. quantity cm3/: 1000s.:		+	Mounting and as		
Load-dependent start Injqty.dif.measure		†	Designation K KF		5,66,0
	1000 10.0012.00	T + +	MS SVS max. LDA stroke	mm: mm:	0,61,0 0,8 6,2
difference 1000S.: Shutoff electromagnet Volt:	12	+	Remarks:	:	
difference 1000s.: Shutoff	1000 15.0021.00 (15.0021.00)	† + + + + +			
electromagnet Volt: TD-travel dif.measure		Ī			
correttore anticipo 1st speed 1/min: 2nd speed 1/min: Charge press. hPa:	iniezione (SV): - 1500	T + + +			

Note inst. in remarks column

: CAS 2,5 D : 18.02.91 Test scheet Edition

replaces

Calibrating oil : ISO-4113

Injection pump : VE3/10F1100R276-3 Type number : 0 460 403 014 Customer Part-No. : 1 967 077 C1

Customer-specific information : CASE

Customer

Engine : D155/440

TEST BENCH REQUIREMENTS

Calibrating-oil return temo.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 020 assembly

Opening

bar: 172.00...175.00 Pressure

Perforated plate

mm: 0.6 diameter

Test inj. tubing : 1 688 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery Prestroke mm: -(from BDC): -

Start of delivery block Piston stroke mm: 1,0

mm: 0,98...1,02

Outlet : A

Injection pump setting values Test specifications in parentheses

Timing device travel

1/min: 800 Speed

Setting value mm: 2.20...2.60

Supply-pump pressure

Speed 1/min: 800

Setting value bar: 4.00...4.60

Full-load del. w/out charge press.:

1/min: 800 Speed

Del. quantity cm3/

1000s.: 61.00...62.00 cm3/: 2,5

Dispersion 1000s.: (3.5)

Low-idle speed regulation

Speed 1/min: 350

Del. quantity cm3/ 1000s.: 13.00...17.00 Del. quantity cm3/: 2.5 1000s.: (3.5)

Full-load speed regulation

Speed 1/min: 1150

Del. quantity cm3/

1000s.: 41.00...47.00

Start:

Speed 1/min: 100 Del. quantity cm3/: 75.00...125.00 mind 1000s.: 75.00

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1050

TD travel

mm: 3.30...4.10 mm: (3.00...4.40)

1/min: 800 3rd speed

mm: 1.90...2.30 mm: (1.40...2.80) TD travel

4th speed 1/min: 600

mm: 0.30...1.10 TD travel mm: (0.00...1.40)

Supply-pump pressure characteristic:

1/min: 500 1st speed

Supply-pump

bar: 2.90...3.50 pressure

2nd speed 1/min: 800

Supply-pump

pressure bar: 4.00...4.60

3rd speed 1/min: 1050

H26

Supply-pump bar: 4.80...5.40 pressure Overlow quantity at overflow valve: 1st speed 1/min: 500 Overflow : 41.70...83.40 cm3/10s: (26.70...98.40) quantity 2nd speed 1/min: 1050 Overflow : 55.60...139.00 cm3/10s: (40.60...154.00) quantity Delivery-quant. and breakaway char.: 2nd speed 1/min: 1250 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) 3rd speed 1/min: 1230 Del. quantity cm3/: 0.00...10.00 1000s.: (0.00...10.00) 4th speed 1/min: 1180 Del. quantity cm3/: 10.00...40.00 1000s.: (10.00...40.00) 1/min: 1150 5th speed Del. quantity cm3/: 41.00...47.00 1000s.: (39.50...48.50) 1/min: 1050 9th speed Del. quantity cm3/: 60.50...63.50 1000s.: (59.50...64.50) 12th speed 1/min: 800 Del. quyntity cm3/: 61.00...62.00 1000s.: (59.20...63.80) 20th speed 1/min: 500 Del. quantity cm3/: 57.00...61.00 1000s.: (56.00...62.00) Mech. shutoff: Mech. Abstellung: 1st speed 1/min: 1050 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Idle delivery: 1st speed 1/min: 350 Del. quantity cm3/: 13.00...17.00 1000s.: (11.00...19.00) cm3/: 2.5 1000s.: (3.5) Dispersion 2nd speed 1/min: 450 Del. quantity cm3/: 0.00...4.00 1000s.: (0.00...4.00) Automatic starting fuel delivery:

1000s.: (80.00...110.00)

2nd speed 1/min: 400 Del. quantity cm3/: 60.00...80.00 1000s.: (60.00...80.00) 4th speed 1/min: 100 Del. quantity cm3/: 75.00...125.00 1000S.: (75.00...125.00) Mounting and assembly dimensions: Designation mm: 3,2...3,4 mm: 5,1...5,3 mm: 1,1...1,5 KF MS mm: 4,9 SVS max. Remarks:

Note inst. in remarks column

Test scheet : VMA 2,2 D Edition : 18.02.91 : 09.11.89 replaces : ISO-4113 Calibrating oil

: VE4/10F2100L168-1 Injection pump : 0 460 404 042 Type number

Customer Part-No. :

Customer-specific information

Customer

: HR 492 HJ Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer: 40.00...48.00 : 42.00...50.00 Electronically

Inter press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening .

bar: 147.00...150.00 Pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery Prestroke mm: -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1000 Speed Charge press. hPa: 800

Setting value mm: 1.80...2.20

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1000 Speed hPa: 800 Charge press

Setting value bar: 3.10...3.70

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1500 Speed Charge press. hPa: 800 Del. quantity cm3/ 1000s.: 60.50...61.50

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.0 1000s.: (3.0)

Full-load del. w/out charge press.:

1/min: 600

Del. quantity cm3/ 1000s.: 40.50...41.50

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

1/min: 400 Speed

Del. quantity cm3/ 1000s.: 13.00...17.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000S.: (3.0)

Full-load speed regulation

1/min: 2300 Speed Charge press hPa: 800 Del. quantity cm3/

1000s.: 27.00...33.00

Start:

Speed 1/min: 100 Del. quantity cm3/: 37.00...67.00 mind 1000s.: 37.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

1/min: 1500 Speed

cm3/Inj.-qty.

difference 1000s.: 8.00...14.00

Shutoff

electromagnet Volt: 12 TD-travel dif.measurement

correttore anticipo iniezione (SV)

1.Speed 1/min: 1500 TD-travel 1/min: 600 1st speed difference mm: 0.90...1.10 Charge press. hPa: 800 Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 SP press.-dif.measurement : 41.70...83.40 Overflow | quantity cm3/10s: (26.70...98.40) 2nd speed 1/min: 2100 Charge press. hPa: 800 pompa di mandata (FP) 1.Speed 1/min: 1500 Supply pump Shutoff pressure electromagnet Volt: 12 Overflow: 55.60...139.00 difference bar: 0,1...0,3 Shutoff electromagnet Volt: 12 cm3/10s: (40.60...154.00) quantity Inspection-pump test specifications Delivery-quant. and breakaway char.: Test specifications in parentheses Timing device characteristic: 1nd speed 1/min: 700* Charge-air pressure-setting 2nd speed 1/min: 2100 point hPa: 400 LDA-stroke Charge press hPa: 800 mm: 6,1 mm: 7.60...8.40 TD travel Shutoff mm: (7.30...8.70) electromagnet Volt: 12 Del. quantity cm3/: 52.00...53.00 Shutoff 1000s.: (50.00...55.00) electromagnet Volt: 12 3rd speed 1/min: 1000 3rd speed 1/min: 2450 Charge press. hPa: 800 Shutoff Charge press hPa: 800 mm: 1.80...2.20 TD travel mm: (1.30...2.70) Shutoff electromagnet Volt: 12 1/min: 1500 5th speed Charge press. hPa: 800 Charge press. hPa: 800 mm: 4.40...5.20 TD travel Shutoff electromagnet Volt: 12
Del. quantity cm3/: 27.00...33.00
1000s.: (26.00...34.00)
9th speed 1/min: 2100 mm: (4.10...5.50) Shutoff electromagnet Volt: 12 Charge press. hPa: 800 Shutoff Supply-pump pressure characteristic: 1st speed 1/min: 2100 electromagnet Volt: 12 Del. quantity cm3/: 52.50...55.50 Charge press. hPa: 800 1000s.: (51.00...57.00) Supply-pump bar: 6.90...7.50 1/min: 1500 12th speed pressure Shutoff Charge press. hPa: 800 electromagnet Volt: 12 Shutoff 2nd speed 1/min: 1000 electromagnet Volt: 12 Del. quyntity cm3/: 60.50...61.50 1000s.: (59.00...63.00) Charge press. hPa: 800 Supply-pump bar: 3.10...3.70 pressure 18th speed 1/min: 600 Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 Del. quantity cm3/: 40.50...41.50 1000s.: (38.50...43.50) 3rd speed 1/min: 600 Charge press. hPa: 800 Supply-pump 20th speed 1/min: 600 Charge press. hPa: 800 Shutoff pressure bar: 1.80...2.40 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 63.00...66.00 1000s.: (61.50...67.50) electromagnet Volt: 12 Overlow quantity at overflow valve:

Mech. shutoff: Automatic starting fuel delivery: Electr. shutoff: 1st speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 45.00...65.00 1000s.: (45.00...65.00) 1000s.: (0.00...3.00) Idle delivery: 2nd speed 1/min: 550 Shutoff 1/min: 400 1st speed electromagnet Volt: 12 Del. quantity cm3/: 35.00...55.00 1000s.: (35.00...55.00) Shutoff electromagnet Volt: 12 Del. quantity cm3/: 13.00...17.00 1000S.: (10.00...20.00) Dispersion cm3/: 3.0 4th speed 1/min: 100 Shutoff 1000s.: (3.0) electromagnet Volt: 12 Del. quantity cm3/: 37.00...67.00 1/min: 450 2nd speed Shutoff 1000s.: (37.00...67.00) electromagnet Volt: 12 Del. quantity cm3/: 2.50...8.50 1000S:: (0.50...10.50) Shutoff electromagnet: 4th speed 1/min: 600 Cut-in Shutoff min voltage : 10.0 electromagnet Volt: 12 Del. quantity cm3/: 0.00...2.00 1000s.: (0.00...2.00) Rated voltage : 12.0 Mounting and assembly dimensions: Load-dependent start of delivery: Designation Inj.—qty.dif.measurement: mm: 3,2...3,4 mm: 5,6...6,0 K KF mm: 0,6...1,0 mm: 3,5 mm: 6,1 mm: 17,0...19,0 1st speed 1/min: 1500 MS Inj.—qty. cm3/ : 3.00...5.00SVS max. difference 1000s.: -LDA stroke Shutoff XK electromagnet Volt: 12 XL mm: 8,6...12,0 1/min: 1500 2nd speed 1/min: 1500 3rd speed Remarks: cm3/: 8.00...14.00 Inj.-qty. difference 1000S.: (8.00...14.00) Shutoff electromagnet Volt: 12 TD-travel dif.measurement: correttore anticipo iniezione (SV): 1st speed 1/min: 1500 TD-travel : 0.90...1.10 difference mm: (0.90...1.10) Shutoff electromagnet Volt: 12 SP press.—dif.measurement: pompa di mandata (FP): 1st speed 1/min: 1500 Supply pumppressure : 0.10...0.30 difference bar: (0.20...0.20) Shutoff electromagnet Volt: 12

Note inst. in remarks column

Test scheet : VMA 2,2 H Edition : 18.02.91 : 20.07.88 Calibrating oil : ISO-4113

Injection pump : VE4/10F2100L269 : 0 460 404 050 Type number

Customer Part-No. :

Customer—specific information

Customer : VM

Engine : HR 492 HJ

Power KW: 82 Speed 1/min: -

TEST BENCH REQUIREMENTS

Calibrating-oil °C return temp.

with thermometer: 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening

Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840

Start of delivery Prestroke mm: -(from BDC): -

Indicator setting Piston stroke mm: 1.0 Outlet : A

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1000 Speed

Charge press. hPa: 1000 Setting value mm: 1.50...1.90

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1000 Charge press hPa: 1000

Setting value bar: 4.40...5.00

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500 Charge press. hPa: 1000

Del. quantity cm3/

1000s.: 66.00...67.00

Shutoff

electromagnet Volt: 12 cm3/: 3.0Dispersion 1000s.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 700

Del. quantity cm3/ 1000s.: 53.00...54.00

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

1/min: 450

Del. quantity cm3/

1000s.: 13.00...17.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000S.: (3.0)

Full-load speed regulation

1/min: 2300 Speed Charge press hPa: 1000

Del. quantity cm3/

1000s.: 27.00...33.00

Start:

1/min: 100 Speed

Del. quantity cm3/: 47.00...67.00 mind 1000s.: 47.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-gty.dif.measurement:

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1/min: 1500 Speed Charge press. hPa: 1000 cm3/Inj.—qty. Supply-pump difference 1000S.: 8.00...14.00 bar: 3.30...3.90 pressure Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 TD-travel dif.measurement correttore anticipo iniezione (SV) Overlow quantity at overflow valve: 1/min: 1500 1.Speed TD-travel 1/min: 700 1st speed difference mm: 0.90...1.10 Charge press. hPa: 800 Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 : 41.70...83.40 SP press. dif.measurement Overflow cm3/10s: (26.70...98.40) 1/min: 2100 pompa di mandata (FP) quantity 1/min: 1500 1.Speed 2nd speed Supply pump Charge press. hPa: 800 Shutoff pressure difference bar: 0.10...0.30 electromagnet Volt: 12 : 55.60...139.00 Shutoff Overflow electromagnet Volt: 12 cm3/10s: (40.60...154.00) quantity Inspection pump test specifications Delivery-quant. and breakaway char.: Test specifications in parentheses Timing-device characteristic: 1/min: 700 1nd speed Charge-air pressure-setting 2nd speed 1/min: 2100 point hPa: 450 hPa: 1000 mm: 7.10...7.90 Charge press LDA-stroke mm: 6.1 TD travel Shutoff mm: (6.80...8.20) electromagnet Volt: 12 Shutoff Del. quantity cm3/: 62.00...63.00 electromagnet Volt: 12 1000s.: (60.00...65.00) 3rd speed 1/min: 1000 1/min: 2450 3rd speed hPa: 1000 Charge press Charge press. hPa: 1000 TD travel mm: 1.50...1.90 Shutoff mm: (1.00...2.40) electromagnet Volt: 12 De'. quantity cm3/: 0.00...8.00 1000S.: (0.00...8.00) 5th speed 1/min: 2300 Shutoff electromagnet Volt: 12 1/min: 1500 5th speed Charge press. hPa: 1000 Shutoff Charge press. hPa: 1000 TD travel mm: 4.10...4.90 electromagnet Volt: 12
Del. quantity cm3/: 27.00...33.00
1000s.: (26.00...34.00) mm: (3.80...5.20) Shutoff electromagnet Volt: 12 1/min: 2100 9th speed Supply-pump pressure characteristic: Charge press. hPa: 1000 Shutoff 1st speed 1/min: 2100 electromagnet Volt: 12 Del. quantity cm3/: 57.70...60.70 Charge press. hPa: 1000 Supply-pump 1000s.: (56.20...62.20) 12th speed 1/min: 1500 Charge press. hPa: 1000 bar: 7.50...8.10 pressure Shutoff electromagnet Volt: 12 Shutoff 2nd speed 1/min: 1000 Charge press. hPa: 1000 electromagnet Volt: 12 Del. quyntity cm3/: 66.00...67.00 Supply-pump 1000s.: (64.50...68.50) bar: 4.40...5.00 pressure 16th speed 1/min: 600 Shutoff Charge press. hPa: 1000 electromagnet Volt: 12 Shutoff 3rd speed 1/min: 700 electromagnet volt: 12

Del. quantity cm3/: 52.50...54.50 1000H.: (52.00...55.00) 18th speed 1/min: 700 : 0.90...1.10 TD-travel difference mm: (0.90...1.10)Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 Del. quantity cm3/: 53.00...54.00 SP press.-dif.measurement: 1000s.: (51.00...56.00) 1/min: 700 pompa di mandata (FP): 1/min: 1500 20th speed 1st speed Charge press. hPa: 1000 Supply pump-Shutoff pressure : 0.10...0.30 electromagnet Volt: 12 difference bar: -Del. quantity cm3/: 67.50...70.50 1000s.: (66.00...72.00) Shutoff electromagnet Volt: 12 Mech. shutoff: Automatic starting fuel delivery: Electr. shutoff: 1/min: 400 1st speed Shutoff 1st speed 1/min: 450 electromagnet Volt: 12 Del. quantity cm3/: 55.00...75.00 1000s.: (55.00...75.00) Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Idle delivery: 2nd speed 1/min: 550 Shutoff 1st speed 1/min: 450 electromagnet Volt: 12 Del. quantity cm3/: 37.00...57.00 1000s.: (37.00...57.00) Shutoff electromagnet Volt: 12 Del. ...antity cm3/: 13.00...17.00 1000s.: (10.00...20.00) cm3/: 3.0 1/min: 100 4th speed Dispersion Shutoff electromagnet Volt: 12 Del. quantity cm3/: 47.00...67.00 1000S.: (47.00...67.00) 1000s.: (3.0) 1/min: 475 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 7.00...13.00 1000s.: (5.00...15.00) Shutoff electromagnet: 1/min: 550 4th speed Cut-in Shutoff min voltage : 10.0 electromagnet Volt: 12 Rated voltage : 12.0 Del. quantity cm3/: 0.50...5.50 1000s.: (0.50...5.50) Mounting and assembly dimensions: Load-dependent start of delivery: Designation Inj.—qty.dif.measurement: mm: 3,2...3,4K mm: 5,6...6.0 KF 1/min: 1500 1st speed mm: 0,6...1,0 MS Ini.-aty. cm3/ : 3.00...5.00 mm: 6,1 mm: 17.0...19.0 LDA stroke difference 1000s.: -Shutoff mm: 10.3...13.7 XL electromagnet Volt: 12 3rd speed 1/min: 1500 Remarks: cm3/: 8.00...14.00 Inj.-qty. difference 1000S.: (8.00...14.00) Shutoff electromagnet Volt: 12 TD-travel dif.measurement: correttore anticipo iniezione (SV):

1st speed 1/min: 1500

Note inst. in remarks column

Test scheet : VMA 2,2 K Edition : 18.02.91 replaces : 11.05.89 Calibrating oil : ISO-4113

: VE4/10F1600L352 Injection pump Type number : 0 460 404 061

Customer Part-No. :

Customer-specific information

Customer

: HR 494 HP Engine

Speed 1/min: 53

TEST BENCH REQUIREMENTS

Calibrating oil °C return temp.

with thermometer: 40.00...48.00 : 42.00...50.00 Electronically

Inlet press., bar: 0.30...0.40

Salibrating nozzle-holder

: 1 688 901 000 assembly

Opening |

Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840

Start of delivery Prestroke mm: -(from BDC): -

Injection pump setting values Test specifications in parentheses

Timing-device travel

Speed 1/min: 1200

Setting value mm: 1.90...2.30

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1200

Setting value bar: 4,80...5.40

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 1200

Del. quantity cm3/ 1000s.: 44.50...45.50

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.5 100GS.: (3.5)

Low-idle speed regulation

Speed 1/min: 400

Del. quantity cm3/ 1000s.: 11.50...15.50

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.5 1000s.: (3.5)

Full-load speed regulation

Speed 1/min: 1650

Del. quantity cm3/

1000s.: 27.00...33.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

De'. quantity cm3/: 45.00...85.00

1000s.: 45.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

1/min: 1200 Speed

Inj.-qty. cm3/

difference 1000s.: 10.00...18.00

TD-travel dif.measurement

correttore anticipo iniezione (SV)

1/min: 1200 1.Speed

TD-travel

difference mm: 0.90...1.10

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing device characteristic:

2nd speed 1/min: TD travel mm:	1600 3.604.40 (3.304.70)	8th speed 1/min: 1625 Shutoff
Shutoff electromagnet Volt:	+	electromagnet Volt: 12 Del. quantity cm3/: 33.5041.50 1000s.: -
3rd speed 1/min: TD travel mm:	1200	9th speed 1/min: 1600 Shutoff
Shutoff electromagnet Volt:	(1.402.80)	electromagnet Volt: 12 Del. quantity cm3/: 38.0041.00 1000s.: (36.5042.50)
4th speed 1/min: TD travel mm:	1000 +	12th speed
Shutoff electromagnet Volt:	(0.401.80)	electromagnet Volt: 12 Del. quyntity cm3/: 44.5045.50 1000s.: (42.0048.00)
Supply-pump pressur	+	20th speed 1/min: 600 Shutoff
2nd speed 1/min: Supply-pump	600	electromagnet Volt: 12 Del. quantity cm3/: 43.5046.50 1000S.: (42.0048.00)
pressure bar: Shutoff	2.403.00	Mech. shutoff:
electromagnet Volt: 3rd speed 1/min: Supply-pump	12 1200	Mech. Abstellung: 1st speed 1/min: 1600
pressure bar: Shutoff	4.805.40	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00)
electromagnet Volt: 4th speed 1/min: Supply-pump	12 1600	Shutoff electromagnet volt: 12
pressure bar: Shutoff	6.407.00	Electr. shutoff:
electromagnet Volt: Overlow quantity at	4-	1st speed
1st speed 1/min: Shutoff	600	Idle delivery:
electromagnet Volt: Overflow :	41.7083.40	1st speed 1/min: 400 Shutoff
quantity cm3/10s: 2nd speed 1/min: Shutoff		electromagnet Volt: 12 Del. quantity cm3/: 11.5015.50 1000S.: (9.5017.50)
electromagnet Volt: Overflow :	55.60139.00	Dispersion cm3/: 3.5 1000s.: (3.5)
quantity cm3/10s: Delivery-quant. and	+	2nd speed 1/min: 480 Shutoff electromagnet Volt: 12
	‡	Del. quantity cm3/: 2.008.00 1000s.: (1.009.00)
3rd speed 1/min: Shutoff electromagnet Volt:	+	3rd speed 1/min: 550 Shutoff electromagnet Volt: 12
Del. quantity cm3/:	0.003.00 +	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00)
Shutoff electromagnet Volt:	12	Load-dependent start of delivery: Injqty.dif.measurement:
Del. quantity cm3/:	(24.0036.00)	3rd speed 1/min: 1200

cm3/: 10.00...18.00 Inj.-qty. difference 1000s.: (10.00...18.00) TD-travel dif.measurement: correttore anticipo iniezione (SV): 1/min: 1200 1st speed TD-travel : 0.90...1.10 difference mm: (0.90...1.10) Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 250 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 50.00...80.00 1000s.: (50.00...80.00) 2nd speed 1/min: 450 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 40.00...60.00 1000s.: (40.00...60.00) 4th speed 1/min: 100 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 45.00...85.00 1000s.: (45.00...85.00) Shutoff electromagnet: Cut-in min voltage : 10.0 Rated voltage : 12.0 Mounting and assembly dimensions: Designation mm: 3,2...3,4 mm: 5,7...5,9 mm: 0,6...1,0 mm: 1,3 mm: 17,0...19,0 K KF MS SVS max. XK XL mm: 14,2...17,6 Remarks:

Note inst. in remarks column

: VMA 2,2 F1 : 18.02.91 Test scheet Edition replaces : 15.11.89 Calibrating oil : ISO-4113

Injection pump : VE4/10F2100L269-1 Type number : 0 460 404 065

Customer Part-No.:

Customer-specific information

Customer

Engine : HR 492.4 HJ

TEST BENCH REQUIREMENTS

Calibrating oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening

Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840

Start of delivery Prestroke mm: -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1000 Speed Charge press. hPa: 1000

Setting value mm: 1.50...1.90

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1000 Charge press hPa: 1000 Setting value bar: 4.40...5.00

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500 Charge press. hPa: 1000 Del. quantity cm3/ 1000s.: 66.00...67.00

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.0

1000s.: (3.0)

Full-load del. w/out charge press.:

1/min: 700 Del. quantity cm3/

1000s.: 45.00...46.00

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

1/min: 450 Speed

Del. quantity cm3/

1**000**s.: 13.00...17.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (3.0)

Full-load speed regulation

Speed 1/min: 2300 Charge press hPa: 1000

Del. quantity cm3/

1**00**0s.: 27.00...33.00

Start:

1/min: 100 Speed

Del. quantity cm3/: 47.00...67.00 mind 1000s.: 47.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery: Inj.-qty.dif.measurement:

1/min: 1500 Speed

cm3/

Inj.-qty. cm3/ difference 1000S.: 8.00...14.00

Shutoff

electromagnet Volt: 12 TD-travel dif.measurement

correttore anticipo iniezione (SV)

1/min: 1500 1.Speed TD-travel 1st speed 1/min: 700 difference mm: 0.90...1.10 Charge press. hPa: 1000 Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 SP press.—dif.measurement Overflow : 41.70...83.40 pompa di mandata (FP) cm3/10s: (26.70...98.40) quantity 1/min: 2100 1. Speed 1/min: 1500 2nd speed Supply pump Charge press. hPa: 1000 pressure Shutoff' bar: 0.10...0.30 difference electromagnet Volt: 12 Overflow : 55 : 55.60...139.00 Shutoff electromagnet Volt: 12 quantity cm3/10s: (40.60...154.00) Inspection pump test specifications Delivery-quant. and breakaway char .: Test specifications in parentheses Timing-device characteristic: 1/min: 700* 1nd speed Charge-air pressure-setting 2nd speed 1/min: 2100 hPa: 450 point Charge press hPa: 1000 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 58.50...59.50 1000S.: (56.50...61.50) mm: 7.10...7.90 TD travel mm: (6.80...8.20) Shutoff electromagnet Volt: 12 3rd speed 1/min: 1000 Charge press hPa: 1000 1/min: 2450 3rd speed Charge press. hPa: 1000 Shutoff TD travel mm: 1.50...1.90 electromagnet Volt: 12 mm: (1.00...2.40) Del. quantity cm3/: 0.00...8.00 Shutoff 1000s.: (0.00...8.00) electromagnet Volt: 12 5th speed 1/min: 2300 Charge press. hPa: 1000 Shutoff 5th speed 1/min: 1500 Charge press. hPa: 1000 electromagner Voit: 12
Del. quantity cm3/: 27.00...33.00
1000S.: (26.00...34.00)
9th speed 1/min: 2100 mm: 4.10...4.90 To travel mm: (3.80...5.20) Shutoff electromagnet Volt: 12 Charge press. hPa: 1000 Supply-pump pressure characteristic: Shutoff electromagnet Volt: 12 Del. quantity cm3/: 56.50...59.50 1000s.: (55.00...61.00) 1st speed 1/min: 2100 Charge press. hPa: 1000 izth speed 1/min: 1500 Charge press. hPa: 1000 Shutoff Supply pump bar: 7.50...8.10 pressure Shutoff electromagnet Volt: 12 2nd speed 1/min: 1000 electromagnet Volt: 12 Del. quyntity cm3/: 66.00...67.00 1000S.: (64.50...68.50) Charge press. hPa: 1000 Supply-pump 1/min: 700 18th speed bar: 4.40...5.00 pressure Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 Del. quantity cm3/: 45.00...46.00 3rd speed 1/min: 700 1000s.: (43.00...48.00) Charge press. hPa: 1000 1/min: 700 20th speed Supply-pump Charge press. hPa: 1000 Shutoff bar: 3.60...4.20 pressure Shutoff electromagnet Volt: 12 Del. quantity cm3/: 67.70...70.70 electromagnet Volt: 12 1000s.: (66.20...72.20) Overlow quantity at overflow valve:

Mech. shutoff: 1/min: 400 1st speed Electr. shutoff: Shutoff electromagnet Volt: 12 Del. quantity cm3/: 52.00...72.00 1000S.: (52.00...72.00) 1st speed 1/min: 450 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) 2nd speed 1/min: 550 Idle delivery: Shutoff electromagnet Volt: 12 1st speed 1/min: 450 Del. quantity cm3/: 40.00...60.00 1000s.: (40.00...60.00) Shutoff electromagnet Volt: 12 Del. quantity cm3/: 13.00...17.00 1000s.: (10.00...20.00) Dispersion cm3/: 3.0 1/min: 100 4th speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 47.00...67.00 1000S.: (47.00...67.00) 1000s.: (3.0) 1/min: 475 2nd speed Shutoff Shutoff electromagnet: Cut-in min voltage : 10,0 Shutoff Rated voltage : 12,0 electromagnet Volt: 12 Del. quantity cm3/: 0.50...5.50 1000s.: (0.50...5.50) Mounting and assembly dimensions: Designation Load-dependent start of delivery: mm: 3,2...3,4Inj. -qty.dif.measurement: KF mm: 5,6...6,0 mm: 0,6...1,0 mm: 20,0...22,0 MS 1st speed 1/min: 1500 XK Inj.-qty. cm3/ : 3.00...5.00 mm: 10,0...13,4 XL difference 1000s.: -Shutoff Remarks: electromagnet Volt: 12 3rd speed 1/min: 1500 Inj.-qty. cm3/: 8.00...14.00 difference 1000s.: -Shutoff electromagnet Volt: 12 TD-travel dif.measurement: correttore anticipo iniezione (SV): 1st speed 1/min: 1500 : 0.90...1.10 TD-travel difference mm: -Shutoff electromagnet Volt: 12 SP press.—dif.measurement: pompa di mandata (FP): 1/min: 1500 1st speed Supply pump-: 0.10...0.30 pressure difference bar: -Shutoff electromagnet Volt: 12 Automatic starting fuel delivery:

J11

Note inst. in remarks column

Test scheet : SOF 2,5 P3 Edition : 18.02.91 : 17.07.89 replaces Calibrating oil : ISO-4113

Injection pump : VE4/10F2050R364 Type number : 0 460 404 066

Customer Part-No. :

Customer-specific information Customer : SOFIM

: 8140.67.2580 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening

Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840

Start of delivery

Prestroke mm: 0,2

(from BDC): +0.02(0.04)

Injection pump setting values Test specifications in parentheses

Timing device travel

1/min: 1000 Speed

Setting value mm: 3.10...3.50

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1000 Speed

Setting value bar: 4.50...5.10

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 2000

Del. quantity cm3/ 1000s.: 35.00...36.00

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.0 1000s.: (3.0)

Low-idle speed regulation

Speed 1/min: 375

Del. quantity cm3/

1000s.: 14.00...18.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (3.0)

Full-load speed regulation

1/min: 2200 Speed

Del. quantity cm3/

1000s.: 13.00...19.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 70.00...100.00

1000s.: 70.00 mind

Shutoff

electromagnet Volt: 12

Load-dependent start c. Slivery:

Inj.-qty.dif.measurement:

1/min: 1000 Speed

Inj.-qty. cm3/

difference 1000s.: 20.00...26.00

Shutoff

electromagnet Volt: 12

TD-travel dif.measurement

correttore anticipo iniezione (SV)

1/min: 1000 1.Speed

TD-travel

difference mm: 0.40...0.60

Shutoff

electromagnet Volt: 12 SP press.—dif.measurement pompa di mandata (FP) 1. Speed 1/min: 1000

Supply pump Overflow : 55.60...139.00 pressure cm3/10s: (40.60...154.00) quantity difference bar: 0.10...0.30 Shutoff Delivery-quant. and breakaway char.: electromagnet Volt: 12 1/min: 2330 Inspection pump test specifications 3rd speed Test specifications in parentheses Shutoff electromagnet Volt: 12 Timing device characteristic: Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) 5th speed 2nd speed 1/min: 1800 1/min: 2200 TD travel mm: 7.60...8.40 Shutoff mm: (7.30...8.70) Shutoff electromagnet Volt: 12 3rd speed 1/min: 1000 mm: 3.10...3.50 TD travel Shutoff electromagnet Volt: 12
Del. quantity cm3/: 23,50...30,50
1000S.: mm: (2.60...4.00) Shutoff electromagnet Volt: 12 1/min: 600 4th speed 12th speed 1/min: 2000 mm: 1.20...2.00 TD travel Shutoff mm: (0.90...2.30) Shutoff electromagnet Volt: 12 1/min: 2000 5th speed mm: 8.60...9.40 TD travel Shutoff mm: (8.30...9.70)electromagnet Volt: 12 Del. quantity cm3/: 38.50...41.50 Shutoff 1000s.: (37.50...42.50) electromagnet Volt: 12 17th speed 1/min: 600 Supply-pump pressure characteristic: Shutoff 1/min: 2000 1st speed Supply-pump pressure bar: 7.00...7.60 Shutoff Shutoff electromagnet Volt: 12 2nd speed 1/min: 1000 electromagnet Volt: 12 Del. quantity cm3/: 31.50...34.50 1000s.: (29.50...36.50) Supply-pump bar: 4.50...5.10 pressure Shutoff Mech. shutoff: electromagnet Volt: 12 1/min: 500 3rd speed Electr. shutoff: Supply-pump bar: 3.50...4.10 pressure Shutoff electromagnet Volt: 12 1000s.: (0.00...3.00) Overlow quantity at overflow valve: Idle delivery: 1/min: 500 1st speed 1st speed 1/min: 375 Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 : 41.70...83.40 Overflow Del. quantity cm3/: 14.00...18.00 1000s.: (11.00...21.00) cm3/: 3.0 1000s.: (3.0) quantity cm3/10s: (26.70...98.40) 1/min: 2000 2nd speed Dispersion Shutoff electromagnet Volt: 12 1/min: 400 2nd speed

Shutoff Shutoff electromagnet Volt: 12 Del. quantity cm3/: 7.00...13.00 1000S.: (5.00...15.00) 4th speed 1/min: 450 Shutoff 4th speed electromagnet Volt: 12 Shutoff Del. quantity cm3/: 0.00...2.00 1000s.: (0.00...2.00) Load-dependent start of delivery: Inj.-qty.dif.measurement: 1st speed 1/min: 1009 Cut-in Inj.-qty. cm3/ : 19.00...21.00 difference 1000s.: (19.00...21.00) Shutoff electromagnet Volt: 12 3rd speed 1/min: 1000 cm3/: 20.00...26.00 Inj.-aty. difference 1000s.: (19.00...27.00) KF Shutoff electromagnet Volt: 12 5th speed 1/min: 1000 Inj.-qty. cm3/: 2.00...8.00 MS SVS max. difference 1000S.: (2.00...8.00) Remarks: Shutoff electromagnet Volt: 12 TD-travel dif.measurement: correttore anticipo iniezione (SV): 1st speed 1/min: 1000 TD-travel : 0.40...0.60 difference mm: (0.40...0.60) Shutoff electromagnet Volt: 12 1/min: 1000 3rd speed : 1.20...1.40 TD-travel difference mm: (1.20...1.40) Shutoff electromagnet Volt: 12 SP press.-dif.measurement: pompa di mandata (FP): 1/min: 1000 1st speed Supply pump-: 0.10...0.30 pressure difference bar: (0.10...0.30) Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 48.00...68.00 1000s.: (48.00...68.00) 2nd speed 1/min: 500

electromagnet Volt: 12 Del. quantity cm3/: 28.00...38.00 1000s.: (28.00...38.00) 1/min: 100 electromagnet Volt: 12 Del. quantity cm3/: 70.00...100.00 1000s.: (70.00...100.00) Shutoff electromagnet: min voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions: Designation mm: mm: 5,6...6,0 mm: 1,6...2,0 mm: 1,9

Note inst. in remarks column

: VMA 2,2 M Test scheet Edition : 18.02.91 replaces : 07.11.89 Calibrating oil : ISO-4113

Injection pump : VE4/10F1600L379 Type number : 0 460 404 067

Customer Part-No. :

Customer-specific information

Customer

Engine : HR 494 HT

Power KW: 68

TEST BENCH REQUIREMENTS

Calibrating oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening

Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 917

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery Prestroke mm: -(from BDC): -

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1200 Speed Charge press. hPa: 1000

Setting value mm: 2.10...2.50

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1200 Speed Charge press hpa: 1000

Setting value bar: 4,80...5.40

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1200 Speed Charge press. hPa: 1000

Del. quantity cm3/

1000s.: 61.00...62.00

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.5 1000s.: (4.0)

Full-load del. w/out charge press.:

1/min: 600 Speed

Del. quantity cm3/

1000s.: 52.00...53.00

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

1/min: 400 Speed

Del. quantity cm3/ 1000s.: 11.00...15.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.5 1000s.: (3.5)

Full-load speed regulation

Speed 1/min: 1690 Charge press hPa: 1000 Del. quantity cm3/ 1000S.: 42.00...48.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 60.00...100.00

1000s.: 60.00 mind

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

1/min: 1200 Charge press hPa: 1000

Inj.-qty. cm3/4th speed 1/min: 1600 difference 1000s.: 19.00...21.00 Charge press. hPa: 1000 Shutoff Supply-pump electromagnet Volt: 12 bar: 6.40...7.00 pressure TD-travel dif.measurement Shutoff correttore anticipo iniezione (SV) electromagnet Volt: 12 1/min: 1200 1. Speed Charge press hPa: 1000 Overlow quantity at overflow valve: TD-travel difference mm: 0.90...1.10 1st speed 1/min: 750 Shutoff Charge press. hPa: 1000 Shutoff electromagnet Volt: 12 SP press.-dif.measurement electromagnet Volt: 12 pompa di mandata (FP) Overflow : 41.70...83.40 1.Speed 1/min: 1200 cm3/10s: (26.70...98.40) quantity Charge press hPa: 1000 2nd speed 1/min: 1600 Supply pump Charge press. hPa: 1000 pressure Shutoff difference bar: 0.10...0.30 electromagnet Volt: 12 55.60...139.00 Shutoff Overflow electromagnet Volt: 12 quantity cm3/10s: (40.60...154.00) Inspection pump test specifications Delivery-quant. and breakaway char.: Test specifications in parentheses Timing-device characteristic: 1nd speed 1/min: 750* Charge-air pressure-setting 2nd speed 1/min: 1600 hPa: 200 point hPa: 1000 Charge press Shutoff mm: 3.90...4.70 mm: (3.60...5.00) electromagnet Volt: 12 Del. quantity cm3/: 58.00...59.00 10005.: (55.50...61.50) TD travel Shutoff electromagnet Volt: 12 3rd speed 1/min: 1750 3rd speed 1/min: 1200 Charge press. hPa: 1000 hPa: 1000 Charge press Shutoff TD travel mm: 2.10...2.50 electromagnet Volt: 12 De'. quantity cm3/: 0.00...3.00 mm: (1.60...3.00) 1000s.: (0.00...3.00) 1/min: 1690 Shutoff electromagnet Volt: 12 4th speed 1/min: 1000 5th speed Charge press. hPa: 1000 Charge press hPa: 1000 Shutoff TD travel mm: 1.00...1.80 electromagnet Volt: 12 Del. quantity cm3/: 42.00...48.00 mm: (0.70...2.10)Shutoff 1000s.: (39.00...51.00) electromagnet Volt: 12 9th speed 1/min: 1600 Charge press. hPa: 1000 Shutoff Supply-pump pressure characteristic: electromagnet Volt: 12
Del. quantity cm3/: 53.50...56.50
1000S.: (52.00...58.00) 2nd speed 1/min: 750 hPa: 1000 Charge press. Supply-pump 1/min: 1200 12th speed bar: 3.00...3.60 pressure Charge press. hPa: 1000 Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 3rd speed 1/min: 1200 Del. quyntity cm3/: 61.10...62.10 Charge press. hPa: 1000 1000s.: (58.60...64,60) Supply-pump 18th speed 1/min: 600 bar: 4.80...5.40 pressure Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12

Del. quantity cm3/: 52.0053.00 1000S.: (49.5055.50) 20th speed 1/min: 750 Charge press. hPa: 1000 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 60.0063.00 1000S.: (58.5064.50)	TD-travel dif.measurement: correttore anticipo iniezione (SV): 1st speed 1/min: - Shutoff electromagnet Volt: 12 2nd speed 1/min: 1200 Charge press. hPa: 1000 TD-travel : 0.901.10 difference mm: (0.901.10)
Mech. shutoff: Mech. Abstellung:	Shutoff electromagnet Volt: 12
1st speed 1/min: 1600 Del. quantity cm3/: 0.003.00 1000S:: (0.003.00) Shutoff	SP pressdif.measurement: pompa di mandata (FP): 1st speed 1/min: 1200 Charge press. hPa: 1000
electromagnet volt: 12	+ Supply pump-
Electr. shutoff:	pressure : 0.100.30 difference bar: (0.100.30) Shutoff
1st speed 1/min: 400	electromagnet Volt: 12 Shutoff
1000\$.: (0.003.00)	electromagnet Volt: 12
Idle delivery:	Automatic starting fuel delivery:
1st speed 1/min: 400	1st speed 1/min: 250 Shutoff
electromagnet Volt: 12 Del. quantity cm3/: 11.0015.00 1000S.: (8.5018.50)	electromagnet Volt: 12 Del. quantity cm3/: 58.0088.00 1000S.: (58.0088.00)
Dispersion cm3/: 3.5 1000s.: (3.5) 2nd speed 1/min: 480	2nd speed 1/min: 450 Shutoff
Shutoff	electromagnet Volt: 12
electromagnet Volt: 12 Del. quantity cm3/: 2.008.00 1000S.: (1.009.00)	Del. quantity cm3/: 49.0063.00 1000s.: (46.0065.00)
3rd speed 1/min: 550	4th speed 1/min: 100 Shucoff
electromagnet Volt: 12	electromagnet Volt: 12
Del. quantity cm3/: 0.003.00 - 1000s.: (0.003.00)	Del. quantity cm3/: 6G.00100.00 1000s.: (60.00100.00)
Load-dependent start of delivery: Injqty.dif.measurement:	Shutoff electromagnet:
	Cut-in
1st speed 1/min: 1200 Charge press. hPa: 1000	min voltage : 10.0 Rated voltage : 12.0
Injqty. cm3/ : 19.0021.00 - difference 1000S.: (19.0021.00) - Shutoff	Mounting and assembly dimensions:
electromagnet Volt: 12	Designation
4th speed 1/min: 1200 -	+ K mm: 3,23,4
Charge press. hPa: 1000 - Injqty. cm3/: 27.0035.00 -	KF mm: 5,66,0
difference 1000S.: (27.0035.00)	MS mm: 0,61,0 SVS max. mm: 1,3
Shutoff electromagnet Volt: 12 -	Remarks:

Note inst. in remarks column

Test scheet : MAN 7,2 T1 Edition : 18.02.91

replaces

Calibrating oil : ISO-4113

: VE4/10F1350R418 Injection pump : 0 460 404 069 Type number

Customer Part-No. :

Customer-specific information

Customer

Engine

: D 0824 GF01

TEST BENCH REQUIREMENTS

Calibrating oil return temo.

with thermometer: 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

assembly : 1 688 901 109

Opening

Pressure bar: 207.00...210.00

Perforated-plate

mm: 0.5 diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840

Start of delivery

Prestroke

e mm: 0,2 (from BDC): +-0,02(0,0)

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1000 Speed

Setting value mm: 3.40...3.80

Shutoff

electromagnet Volt: 24

Supply-pump pressure

1/min: 1000

Setting value bar: 5.20...5.80

Shutoff

electromagnet Volt: 24

Full-load del. w/out charge press.:

Speed 1/min: 1000

Del. quantity cm3/ 1000s.: 73,10...74,10

Shutoff

electromagnet Volt: 24 Dispersion cm3/: 4,0 1000s.: (4.5)

Low-idle speed regulation

1/min: 300

Del. quantity cm3/ 1000s.: 7.00...13.00

Shutoff

electromagnet Volt: 24 Del. quantity cm3/: 6.0 1000s.: (6.5)

Full-load speed regulation

1/min: 1370 Speed

Del. quantity cm3/

1000s.: 57.00...63.00

Shutoff

electromagnet Volt: 24

Start:

1/min: 100 Speed

Del. quantity cm3/: 40.00...80.00

1000s.: 40.00

Shutoff

electromagnet Volt: 24

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1300

TD travel mm: 6.60...7.40 mm: (6.30...7.70)

Shutoff

electromagnet Volt: 24 3rd speed 1/min: 1000

TD travel mm: 3.40...3.80

mm: (2.90...4.30)

Shutoff

electromagnet Volt: 24 4th speed 1/min: 800

	1.101.90		utoff	
Shutoff	(0.802.20)	+ ele	ectromagnet Vol	t: 24
electromagnet Volt:	24	+	10009	3/: 73 .1076.10 5.: (7 1.6077.60)
Supply-pump pressur	e characteristic:		th speed 1/mi utoff	n: 1000
		+ ele	ectromagnet Vol	.t: 24
1st speed 1/min:	600	† Del	l. quyntity cm3	73.1074.10
Supply-pump pressure bar:	3.103.70	15.		6.: (71.1076.10)
Shutoff		Shu	utoff	n: 800
electromagnet Volt:	24		ectromagnet Vol	
2nd speed 1/min:	1000	† Del	L. quantity cm3	3/: 72.2076.20
Supply-pump pressure bar:	5.205.80	201		i.: (70.7077.70) n: 600
Shutoff	J.20J.80		th speed 1/mi utoff	n: 000
electromagnet Volt:	24		ectromagnet Vol	+. 24
3rd speed 1/min:				3/: 62.8068.80
Supply-pump		+	10008	.: (61.8069.80)
	6.907.50	+		
Shutoff		A .	ch. shutoff:	
electromagnet Volt:	24	† Med	ch. Abstellung:	
Overlow quantity at	overflow valve:	151	speed 1/mi	n: 1300
1st speed 1/min:	400	+ bei	l. quantity cm3	/: U.UU3.UU
Shutoff	000	Chi	toff (UUUS	.: (0.003.00)
electromagnet Volt:	24		ectromagnet vol	+. 5/.
Overflow :	41.7083.40	1	seer onlagine e voe	24
quantity cm3/10s:	(26.7098.40)	ELE	ectr. shutoff:	
2nd speed 1/min:	1300	ļ - · ·		
Shutoff			t speed 1/mi	
electromagnet Volt:		† Del	l. quantity_cm3	3/: 0.003.00
Overflow :	55.60139.00	†	1000s	.: (0.003.00)
quantity cm3/10s:	(40.60154.00)	+	la dal Sirani.	
Delivery-quant. and	hreakauay chan	101	le delivery:	
becively qualit. and	Dieakaway Cilai	I 1et	t speed 1/mi	n: 300
			stoff	11. 300
2nd speed 1/min:	1550		ectromagnet Vol	t: 24
Shutoff		Del	l. quantity cm3	7: 7.0013.00
electromagnet Volt:		+ .	1000s	.: (5.0015.00)
Del. quantity cm3/:		† Dis		7: 6.0_
	(0.003.00)	† ,		.: (6.5)
3rd speed 1/min: Shutoff	1400			n: 450
electromagnet Volt:	2/1		utoff ectromagnet Vol	+. 2/.
Del. quantity cm3/:			L. quantity cm3	
	(0.0015.00)	1		.: (0.003.00)
4th speed 1/min:		1	10000	(0.001.10100)
Shutoff		- Aut	comatic startin	g fuel delivery:
electromagnet Volt:		+		,
Del. quantity cm3/:	15.0045.00			n: 350
	(15.0045.00)		utoff	. 21
5th speed 1/min:	13/0		ectromagnet Vol	
Shutoff electromagnet Volt:	2/	T Det		7: 65.00115.00
Del. quantity cm3/:		Ι	10005	.: (65.00115.00)
	(55.5064.50)	200	d speed 1/mi	n: 500
9th speed 1/min:		ļ	* Speed 1/101	11. 200
. 1		ī		

Shutoff

electromagnet Volt: 24 Del. quantity cm3/: 40.00...70.00 1000s.: (40.00...70.00)

4th speed Shutoff 1/min: 100

electromagnet Volt: 24 Del. quantity cm3/: 40.00...80.00 1000s.: (40.00...80.00)

Shutoff electromagnet:

Cut-in

min voltage : 20.0 Rated voltage : 24.0

Mounting and assembly dimensions:

:

Designation

K KF mn: -

mm: 5,6...6,0 mm: 1,0...1,4 mm: 5,3 MS

SVS max.

Remarks:

J20

Note inst. in remarks column

: VMA 2,2 F2 Test scheet Edition : 18.02.91

replaces

Calibrating oil : ISO-4113

Injection pump : VE4/10F2100L269-2 Type number : 0 460 404 070

Customer Part-No.:

Customer-specific information

Customer

Engine

: HR 492.4 SHIRG

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening

bar: 147.00...150.00 Pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery Prestroke mm: -(from BDC): -

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1000 Speed Charge press. hPa: 1000

Setting value mm: 1.50...1.90

electromagnet Volt: 12

Supply-pump pressure

1/min: #300 Speed Charge press hPa: 1083

Setting value bar: 4.40...5.00

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1500 Speed Charge press. hPa: 1000 Del. quantity cm3/ 1000S.: 65.00...66.00

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.0

1000s.: (3.0)

Full-load del. w/out charge press.:

1/min: 700

Del. quantity cm3/

1**00**0s.: 43.50...44.50

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

1/min: 425 Speed

Del. quantity cm3/

1000s.: 13.90...17.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (3.0)

Full-load speed regulation

Speed 1/min: 2300 Charge press hPa: 1000

Del. quantity cm3/ 1000s.: 27.00...33.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100 Del. quantity cm3/: 47.00...67.00

1000s.: 47.00 mind

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

Speed 1/min: 1500

cm3/Inj.-qty.

difference 1000s.: 8.00...14.00

Shutoff

electromagnet Volt: 12

TD-travel dif.measurement correttore anticipo iniezione (SV) Overlow quantity at overflow valve: 1/min: 1500 1.Speed TD-travel 1st speed 1/min: 700 Charge press. hPa: 1000 Shutoff difference mm: 0.90...1.10 Shutoff electromagnet Volt: 12 electromagnet Volt: 12 : 41.70...83.40 SP press.-dif.measurement Overflow cm3/10s: (26.70...98.40) 1/min: 2100 pompa di mandata (FP) quantity 1.Speed 1/min: 1500 2nd speed Charge press. hPa: 1000 Supply pump pressure Shutoff bar: 0.10...0.30 difference electromagnet Volt: 12 Shutoff : 55.60...139.00 Overflow electromagnet Volt: 12 cm3/10s: (40.60...154.00) quantity Inspection pump test specifications Delivery-quant. and breakaway char.: Test specifications in parentheses Timing-device characteristic: 1nd speed 1/min: 700 Charge-air pressure-setting 2nd speed 1/min: 2100 point hPa: 450 hPa: 1000 mm: 6.90...7.70 Charge press Shutoff TD travel electromagnet Volt: 12 Del. quantity cm3/: 57.00...58.00 mm: (6.60...8.00) Shutoff 1000s.: (55.00...60.00) electromagnet Volt: 12 1/min: 2450 3rd speed 1/min: 1000 3rd speed Charge press. hPa: 1000 hPa: 1000 Charge press Shutoff mm: 1.50...1.90 TD travel electromagnet Volt: 12 mm: (1.00...2.40) Del. quantity cm3/: 0.00...8.00 1000s.: (0.00...8.00) Shutoff electromagnet Volt: 12 1/min: 2300 5th speed 5th speed 1/min: 1500 Charge press. hPa: 1000 Charge press. hPa: 1000 Shutoff electromagnet Volt: 12
Del. quantity cm3/: 27.00...33.00
1000s.: (26.00...34.00) mm: 4.10...4.90 TD travel mm: (3.80...5.20) Shutoff electromagnet Volt: 12 9th speed 1/min: 2100 Charge press. hPa: 1000 Supply—pump pressure characteristic: Shutoff electromagnet Volt: 12 Del. quantity cm3/: 55.50...58.50 1/min: 2100 1st speed Charge press. hPa: 1000 1000s.: (54.00...60.00) Supply-pump 12th speed 1/min: 1500 bar: 7.50...8.10 Charge press. hPa: 1000 pressure Shutoff Shutoff electromagnet Volt: 12
Del. quyntity cm3/: 65.00...66.00
1000S.: (63.5...67,5) electromagnet Volt: 12 2nd speed 1/min: 1000 Charge press. hPa: 1000 Supply-pump 1/min: 700 18th speed bar: 4.40...5.00 pressure Shutoff Shutoff electromagnet Volt: 12 Del. quantity cm3/: 43.50...44.50 electromagnet Volt: 12 1/min: 700 1000s.: (41.50...46.50) 3rd speed Charge press. hPa: 1000 20th speed 1/min: 700 Supply-pump Charge press. hPa: 1000 bar: 3.60...4.20 pressure Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12

Del. quantity cm3/: 66.50...69.50 Shutoff 1000s.: (65.00...71.00) electromagnet Volt: 12 Mech. shutoff: Automatic starting fuel delivery: Electr. shutoff: 1st speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 52.00...72.00 1000s.: (52.00...72.00) 1st speed 1/min: 450 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Idle delivery: 2nd speed 1/min: 550 Shutoff 1/min: 425 1st speed electromagnet Volt: 12 Shutoff Del. quantity cm3/: 40.00...60.00 electromagnet Volt: 12 1000s.: (40.00...60.00) Del. quantity cm3/: 13.00...17.00 1000s.: (10.00...20.00) 1/min: 100 4th speed cm3/: 3.0 Dispersion Shutoff 1000s.: (3.0) 1/min: 450 electromagnet Volt: 12 Del. quantity cm3/: 47.00...67.00 2nd speed Shutoff 1000s.: (47.00...67.00) electromagnet Volt: 12 Del. quantity cm3/: 7.00...13.00 Shutoff electromagnet: 1000s.: (5.00...15.00) 1/min: 500 4th speed Cut-in Shutoff : 10.0 min voltage electromagnet Volt: 12 Rated voltage : 12.0 Del. quantity cm3/: 0.00...5.00 1000s.: (0.00...5.00) Mounting and assembly dimensions: Load-dependent start of delivery: Designation Inj.-qty.dif.measurement: mm: 3,2...3,4 K KF mm: 5,6...6,0 1/min: 1500 MS 1st speed mm: 0,6...1,0Inj.-qty. cm3/ : 3.00...5.00 difference 1000s.: -Reparks: Shutoff . electromagnet Volt: 12 1/min: 1500 3rd speed cm3/: 8.00...14.00 Inj.-qty. difference 1000S.: (8.00...14.00) Shutoff electromagnet Volt: 12 TD-travel dif.measurement: correttore anticipo iniezione (SV): 1st speed 1/min: 1500 : 0.90...1.10 TD-travel difference mm: (0.90...1.10) Shutoff electromagnet Volt: 12 SP press.-dif.measurement: pompa di mandata (FP): 1/min: 1500 1st speed Supply pump-: 0.10...0.30 pressure difference bar: -

Note inst. in remarks column

Test scheet : OPE 2,3 M9 Edition : 18.02.91

replaces

Calibrating oil : ISO-4113

Injection pump : VE4/10F2100L297-4

: 0 460 404 071 Type number

Customer Part-No. :

Customer-specific information

Customer : OPEL

Engine : 2,3 DTR-MT

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening

bar: 147.00...150.00 Pressure

Test inj. tubing : 1 688 901 000

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840

Start of delivery Prestroke mm: -(from BDC): -

Injection pump setting values Test specifications in parentheses

Timing device travel

1/min: 1500 Speed Charge press. hPa: 1000

mm: 5.10...5.50 Setting value

AFB/AFB

Volt: 12 valve Shutoff

electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500 Charge press hPa: 1000

Setting value bar: 5.40...6.00

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1200 Charge press. hPa: 1000

Del. quantity cm3/

1000s.: 62.50...63.50

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12 cm3/: 3.0 Dispersion 1000s.: (3.0)

Full-load del. w/out charge press.:

1/min: 500 Speed

Del. quantity cm3/ 1000s.: 40.50...41.50

11

KSB/AFB valve Volt: 12

Shutoff electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 290

De'. quantity cm3/

1000s.: 13.50...17.50

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (3.0)

Full-load speed regulation

1/min: 2500 Speed Charge press hPa: 1000

Del. quantity cm3/

1000s.: 15.00...21.00

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100

Del. quantit mind	y cm3/: 1000s.:	57.0059.00 -	†	Shutoff electromagnet Volt	: 12
Load-depende Injqty.dif		t of delivery: ement:	Ī		: 1000 : 3.504.10
Speed	1/min:	1500	<u>†</u>	KSB/AFB	: (3.104.50)
Iniaty.	cm3/	10.0018.00	‡	valve Volt: Shutoff	: 12
KSB/AFB valve	Volt:		+	electromagnet Volt: 8th speed 1/min	: 12 : 1200
Shutoff electromagne			1	Charge press. hPa:	: 1000 : 3.806.20 B
TD-travel di	f.measu	rement	Ŧ	mm:	
correttore a 1.Speed		iniezione (SV) 1500	1	Shutoff electromagnet Volt:	. 12
TD-travel			+	9th speed 1/min:	: 300
difference KSB/AFB	mm:	0.200.40	†		: 1000 : 1.503.50 A
valve	Volt:	12	+	mm:	(1.303.70)
Shutoff electromagne	t Volt:	12	†	Shutoff electromagnet Volt:	. 12
SP pressdi	f.measu	rement	+	10th speed 1/min:	: 800
pompa di man 1.Speed	data (Fl 1/min:		+		: 1000 : 3.505.90 *
Supply pump	1791111.	1300	Ţ		(2.906.50)
pressure	bone	0.100.30	+	Shutoff	. 42
difference KSB/AFB	par:	0.100.30	Ī	electromagnet Volt:	12
valve Shutoff	Volt:	12	‡	Supply-pump pressu	re characteristic:
electromagne	t Volt:	12	†	1st speed 1/mins Charge press. hPas	
Inspection-p	ump tes	t specifications	Į	Supply-pump	. 1000
		in parentheses	‡	pressure bar: KSB/AFB	6.907.50
Timing-device			‡	valve Volt: Shutoff	: 12
	1/min:	2100	+	electromagnet Volt:	12
Charge press TD travel		1000 7.808.60	1	2nd speed 1/min: Charge press. hPa:	1000
		(7.508.90)	+	Supply-pump	
KSB/AFB valve	Volt:	12	‡	pressure bar: KSB/AFB	5.406.00
Shutoff			+	valve Volt:	12
electromagne 3rd speed	t Volt: 1/min:		1	Shutoff electromagnet Volt:	12
Charge press	hPa:	1000	+	3rd speed 1/min:	1200
TD travel		5.105.50 (4.606.00)	‡	Charge press. hPa: Supply-pump	1000
KSB/AFB valve	Volt:	12	t	pressure bar: KSB/AFB	4.605.20
Shutoff			Ŧ	valve Volt:	12
electromagne 4th speed	t Volt: 1/min:		†	Shutoff	. 12
Charge press		1000	I	electromagnet Volt: 4th speed 1/min:	
TD travel	mm:	1.101.90 (0.802.20)	‡		1000
KSB/AFB valve			†		4.204.80 *
valve	Volt:	16	T		

Shutoff	→ Shutoff
electromagnet Volt: 12	electromagnet Volt: 12
Overlow quantity at overflow valve:	Del. quantity cm3/: 40.5042.50 1000s.: -
4	12th speed 1/min: 1200
1st speed 1/min: 500	Charge press. hPa: 1000
KSB/AFB	KSB/AFB
valve Volt: 12	valve Volt: 12
Shutoff	Shutoff
electromagnet Volt: 12	electromagnet Volt: 12
Overflow : 41.7083.40 quantity cm3/10s: (26.7098.40)	Del. quyntity cm3/: 62.5063.50 1000s.: (60.7065,30)
2nd speed 1/min: 2100	18th speed 1/min: 500
Charge press. hPa: 1000	KSB/AFB
KSB/AFB	valve Volt: 12
valve Volt: 12	Shutoff
Shutoff	electromagnet Volt: 12
electromagnet Volt: 12	Del. quantity cm3/: 40.5041.50
Overflow : 55.60139.00	1000s.: (38.7043.30)
quantity cm3/10s: (40.60154.00)	1 20th speed 1/min: 800
	Charge press. hPa: 1000
Delivery-quant. and breakaway char.:	KSB/AFB
	valve Volt: 12
And speed Almin 200	Shutoff
1nd speed 1/min: 800*	electromagnet Volt: 12
Charge-air pressure-setting point hPa: 500	Del. quantity cm3/: 60.5063.50
point hPa: 500	1000s.: -
valve Volt: 12	Mech. shutoff:
Shutoff	riedii. Silutoff:
electromagnet Volt: 12	Electr. shutoff:
Del. quantity cm3/: 59.5060.50	Lecci Silacorr.
1000s.: (57.0063.00)	
10003(21,001,03,001)	1st speed 1/min: 290
	1st speed 1/min: 290 Del. quantity cm3/: 0.003.00
3rd speed 1/min: 2700	1st speed
3rd speed 1/min: 2700 Charge press. hPa: 1000 KSB/AFB	Del. quantity cm3/: 0.003.00
3rd speed 1/min: 2700 Charge press. hPa: 1000 KSB/AFB valve Volt: 12	Del. quantity cm3/: 0.003.00
3rd speed 1/min: 2700 Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Id!e delivery:
3rd speed 1/min: 2700 Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12	Del. quantity cm3/: 0.003.00 1000S:: (0.003.00) Id!e delivery: 1st speed 1/min: 290
3rd speed 1/min: 2700 Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.006.00	Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Id!e delivery: 1st speed 1/min: 290 KSB/AFB
3rd speed 1/min: 2700 Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.006.00 1000\$\(\text{1000}6.00 \)	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Id'e delivery: 1st speed 1/min: 290 KSB/AFB valve Volt: 12
3rd speed 1/min: 2700 Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.006.00 1000S.: (0.006.00) 5th speed 1/min: 2500	Del. quantity cm3/: 0.003.00 1000S:: (0.003.00) Id!e delivery: 1st speed 1/min: 290 KSB/AFB valve Volt: 12 Shutoff
3rd speed 1/min: 2700 Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.006.00 1000S.: (0.006.00) 5th speed 1/min: 2500 Charge press. hPa: 1000	Del. quantity cm3/: 0.003.00 1000S: (0.003.00) Id!e delivery: 1st speed 1/min: 290 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12
3rd speed 1/min: 2700 Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.006.00 1000S.: (0.006.00) 5th speed 1/min: 2500 Charge press. hPa: 1000 KSB/AFB	Del. quantity cm3/: 0.003.00 1000S:: (0.003.00) Id'e delivery: 1st speed 1/min: 290 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 13.5017.50
3rd speed 1/min: 2700 Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.006.00 1000S.: (0.006.00) 5th speed 1/min: 2500 Charge press. hPa: 1000 KSB/AFB valve Volt: 12	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Id'e delivery: 1st speed 1/min: 290 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 13.5017.50 1000s.: (11.5019.50)
3rd speed 1/min: 2700 Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.006.00 1000S:: (0.006.00) 5th speed 1/min: 2500 Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff	Del. quantity cm3/: 0.003.00 1000S:: (0.003.00) Id'e delivery: 1st speed 1/min: 290 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 13.5017.50 1000S:: (11.5019.50) Dispersion cm3/: 3.0
3rd speed 1/min: 2700 Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.006.00 1000S: (0.006.00) 5th speed 1/min: 2500 Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Id'e delivery: 1st speed 1/min: 290 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 13.5017.50 1000s.: (11.5019.50) Dispersion cm3/: 3.0 1000s.: (3.0)
3rd speed 1/min: 2700 Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.006.00 1000S: (0.006.00) 5th speed 1/min: 2500 Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 15.0021.00	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Id'e delivery: 1st speed 1/min: 290 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 13.5017.50 1000s.: (11.5019.50) Dispersion cm3/: 3.0 1000s.: (3.0) 2nd speed 1/min: 320
3rd speed 1/min: 2700 Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.006.00 1000S.: (0.006.00) 5th speed 1/min: 2500 Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 15.0021.00 1000S.: (14.0022.00)	Del. quantity cm3/: 0.003.00 1000S:: (0.003.00) Id'e delivery: 1st speed 1/min: 290 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 13.5017.50 1000S:: (11.5019.50) Dispersion cm3/: 3.0 1000S:: (3.0) 2nd speed 1/min: 320 KSB/AFB
3rd speed 1/min: 2700 Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.006.00 1000S.: (0.006.00) 5th speed 1/min: 2500 Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 15.0021.00 1000S.: (14.0022.00) 9th speed 1/min: 2100	Del. quantity cm3/: 0.003.00 1000S:: (0.003.00) Id'e delivery: 1st speed 1/min: 290 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 13.5017.50 1000S:: (11.5019.50) Dispersion cm3/: 3.0 1000S:: (3.0) 2nd speed 1/min: 320 KSB/AFB valve Volt: 12
3rd speed 1/min: 2700 Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.006.00 1000S.: (0.006.00) 5th speed 1/min: 2500 Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 15.0021.00 1000S.: (14.0022.00)	Del. quantity cm3/: 0.003.00 1000S:: (0.003.00) Id'e delivery: 1st speed 1/min: 290 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 13.5017.50 1000S:: (11.5019.50) Dispersion cm3/: 3.0 1000S:: (3.0) 2nd speed 1/min: 320 KSB/AFB valve Volt: 12 Shutoff
3rd speed 1/min: 2700 Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.006.00 1000S.: (0.006.00) 5th speed 1/min: 2500 Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 15.0021.00 1000S.: (14.0022.00) 9th speed 1/min: 2100 Charge press. hPa: 1000	Del. quantity cm3/: 0.003.00 1000S:: (0.003.00) Id'e delivery: 1st speed 1/min: 290 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 13.5017.50 1000S:: (11.5019.50) Dispersion cm3/: 3.0 1000S:: (3.0) 2nd speed 1/min: 320 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12
3rd speed 1/min: 2700 Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.006.00 1000S.: (0.006.00) 5th speed 1/min: 2500 Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 15.0021.00 1000S.: (14.0022.00) 9th speed 1/min: 2100 Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff	Del. quantity cm3/: 0.003.00 1000S:: (0.003.00) Id'e delivery: 1st speed 1/min: 290 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 13.5017.50 1000S:: (11.5019.50) Dispersion cm3/: 3.0 1000S:: (3.0) 2nd speed 1/min: 320 KSB/AFB valve Volt: 12 Shutoff
<pre>3rd speed 1/min: 2700 Charge press. hPa: 1000 KSB/AFB valve</pre>	Del. quantity cm3/: 0.003.00 1000S:: (0.003.00) Id'e delivery: 1st speed 1/min: 290 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 13.5017.50 1000S:: (11.5019.50) Dispersion cm3/: 3.0 1000S:: (3.0) 2nd speed 1/min: 320 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 7.0013.00
Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.006.00 1000S.: (0.006.00) 5th speed 1/min: 2500 Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 15.0021.00 1000S.: (14.0022.00) 9th speed 1/min: 2100 Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Shutoff electromagnet Volt: 12 Shutoff electromagnet Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 51.3053.70	Del. quantity cm3/: 0.003.00 1000S:: (0.003.00) Id'e delivery: 1st speed 1/min: 290 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 13.5017.50 1000S:: (11.5019.50) Dispersion cm3/: 3.0 1000S:: (3.0) 2nd speed 1/min: 320 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 7.0013.00 1000S:: (6.5013.50) 4th speed 1/min: 380 KSB/AFB
Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.006.00 1000S.: (0.006.00) 5th speed 1/min: 2500 Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 15.0021.00 1000S.: (14.0022.00) 9th speed 1/min: 2100 Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Shutoff electromagnet Volt: 12 Shutoff electromagnet Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 51.3053.70 1000GS.: (50.2054.80)	Del. quantity cm3/: 0.003.00 1000S:: (0.003.00) Id'e delivery: 1st speed 1/min: 290 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 13.5017.50 1000S:: (11.5019.50) Dispersion cm3/: 3.0 1000S:: (3.0) 2nd speed 1/min: 320 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 7.0013.00 1000S:: (6.5013.50) 4th speed 1/min: 380 KSB/AFB valve Volt: 12
Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.006.00 1000S.: (0.006.00) 5th speed 1/min: 2500 Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 15.0021.00 1000S.: (14.0022.00) 9th speed 1/min: 2100 Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Shutoff electromagnet Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 51.3053.70 1000S.: (50.2054.80) 10th speed 1/min: 800	Del. quantity cm3/: 0.003.00 1000S:: (0.003.00) Id'e delivery: 1st speed 1/min: 290 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 13.5017.50 1000S:: (11.5019.50) Dispersion cm3/: 3.0 1000S:: (3.0) 2nd speed 1/min: 320 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 7.0013.00 1000S:: (6.5013.50) 4th speed 1/min: 380 KSB/AFB valve Volt: 12 Shutoff
Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.006.00 1000S.: (0.006.00) 5th speed 1/min: 2500 Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 15.0021.00 1000S.: (14.0022.00) 9th speed 1/min: 2100 Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Shutoff electromagnet Volt: 12 Shutoff electromagnet Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 51.3053.70 1000GS.: (50.2054.80)	Del. quantity cm3/: 0.003.00 1000S:: (0.003.00) Id'e delivery: 1st speed 1/min: 290 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 13.5017.50 1000S:: (11.5019.50) Dispersion cm3/: 3.0 1000S:: (3.0) 2nd speed 1/min: 320 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 7.0013.00 1000S:: (6.5013.50) 4th speed 1/min: 380 KSB/AFB valve Volt: 12

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Del. quantity cm3/: 0.00...2.60 1000s.: (0.00...2.60) Load-dependent start of delivery: Inj.-qty.dif.measurement: 1/min: 1500 1st speed Inj.—qty. cm3/ : 6.00...8.00 difference 1000s.: -KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 3rd speed 1/min: 1500 Ini.—aty. cm3/: 10.00...18.00 difference 1000s.: (10.00...18.00) KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 TD-travel dif.measurement: correttore anticipo iniezione (SV): 1st speed 1/min: 1500 : 0.20...0.40 TD-travel mm: (0.20...0.40) difference KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 SP press.-dif.measurement: pompa di mandata (FP): 1st speed 1/min: 1500 Supply pump-: 0.10...0.30 pressure difference bar: -KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1/min: 250 1st speed KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 55.00...65.00 1000s.: (55.00...65.00) 1/min: 400 2nd speed KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 43.00...53.00 1000s.: (40.00...50.00)

1/min: 100 3rd speed KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 57.00...59.00 1000s.: (50.00...66.00) Shutoff electromagnet: Cut-in min voltage : 10.0 Rated voltage : 12.0 Mounting and assembly dimensions: Designation mm: 3.2...3.4 mm: 5.6...6.0 KF MS mm: 0.8...1.2 Remarks: :

Note inst. in remarks column

: BMW 2,4 F Test scheet Copl. date: : 742 : 18.02.91 Edition : 26.08.87 replaces

Calibrating oil : ISO-4113

: VE6/10F2300R206 Injection pump Type number : 0 460 406 047

Customer Part-No. : Customer Part-No. :

Customer-specific information

Customer

: M21D24 W Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40.00...48.00 : 42.00...50.00 Electronically

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening

bar: 130.00...133.00 Pressure

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 450 x Length

Start of delivery mm: -Prestroke (from BDC): -

Injection pump setting values Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500 Charge press. hPa: 500

Setting value mm: 4.10...4.50

Shutoff

electromaca et Volt: 12

Supply-pump pressure

Speed 1/min: 1500 Charge press hPa: 500

Setting value bar: 6.00...6.40

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1250 Charge press. hPa: 500 Del. quantity cm3/

1000s.: 25.50...26.50

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.0 1000s.: (3.0)

Full-load del. w/out charge press.:

1/min: 500 Speed Del. quantity cm3/

1000s.: 23.50...26.50

Shutoff

electromagnet Voit: 12 Dispersion cm3/: 3.0 1000s.: (3.0)

Low-idle speed regulation

1/min: 400 Charge press hPa: 500

Del. quantity cm3/ 1000s.: 6.00...10.00

Shutoff

electromagnet Volt: 12 De'. quantity cm3/: 2.5 1000s.: (3.0)

Full-load speed regulation

1/min: 2500 Speed Charge press hPa: 500 Del. quantity cm3/

1000s.: 11.50...17.50

cm3/: 5.0 Dispersion 1000s.: (5.0)

Start:

1/min: 100 Speed

Del. quantity cm3/: 40.00...50.00 mind 1000s.: 40.00

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd amond 1/min. 2000	†	Charge press. nPa:	200
2nd speed 1/min: 2000	†	Shutoff	40
Charge press hPa: 500	+	electromagnet Volt:	
TD travel mm: 6.10	6.90 +		55.60139.00
mm: (5.80	.7.20) +	quantity cm3/10s:	(40.60154.00
Shutoff	+		
electromagnet Volt: 12	 	Delivery-quant. and	breakaway char.
3rd speed 1/min: 1500	+	,	•
Charge press hPa: 500	1		
TD travel mm: 4.10	4.50	3rd speed 1/min:	2650
mm: (3.80		Charge press. hPa:	
Shutoff	14.00	Shutoff	200
electromagnet Volt: 12	Ŧ	electromagnet Volt:	12
4th speed 1/min: 750	T		
	Ť	Del. quantity cm3/:	(0.000.00
Charge press hPa: 500	1 (0)		(0.006.00)
TD travel mm: 0.80		5th speed 1/min:	
mm: (0.50	.1.90)	Charge press. hPa:	500
Shutoff	+	Shutoff	
electromagnet Volt: 12	+	electromagnet Volt:	12
8th speed 1/min: 1000	+	Del. quantity cm3/:	11.5017.50
Charge press. hPa: 500	+	1000s.:	(9.5019.50)
TD travel mm: 4,20	5,80 B +	9th speed 1/min:	
Shutoff	<u></u>	Charge press. hPa:	
electromagnet Volt: 12	1	Shutoff	
9th speed 1/min: 500	1	electromagnet Volt:	12
Charge press. hPa: 500	1	Del. quantity cm3/:	25 50 28 50
TD travel mm: 2.70	/, 30 A	10000	(24.5029.50)
Shutoff	7.50 /		
electromagnet Volt: 12	T	10th speed 1/min:	
etettrullagnet vott: 12	Ť	Charge press. hPa:	500
Complete income and a second about	**************************************	Shutoff	40
Supply-pump pressure charac	teristic:	electromagnet Volt:	
4.1 2000	†	Del. quantity cm3/:	
1st speed 1/min: 2000	+		(27.5032.50)
Charge press. hPa: 500	+	12th speed 1/min:	
Supply-pump	+	Charge press. hPa:	500
pressure bar: 7.30	7.70	Shutoff	
Shutoff	+	electromagnet Volt:	12
electromagnet Volt: 12	+	Del. quyntity cm3/:	25.5026.50
2nd speed 1/min: 1500	+	1000s.:	(23.7028,70)
Charge press. hPa: 500	+	13th speed 1/min:	1250
Supply-pump	+	Charge press. hPa:	-100
pressure bar: 6.00	6.40	Shutoff	
Shutoff	1	electromagnet Volt:	12
electromagnet Volt: 12	1	Del. quantity cm3/:	
3rd speed 1/min: 500	1		(18.8023.20)
Charge press. hPa: 500	1	17th speed 1/min:	
Supply-pump	I	Charge press. hPa:	
pressure bar: 3.20	7 40 T	Shutoff	120
Shutoff	J.00		10
	Ť	electromagnet volt:	
electromagnet Volt: 12	†	Del. quantity cm3/:	(20, 20,24.80
Orania a mandido de accordia			(20.2025.80)
Overlow quantity at overflo	w valve:	18th speed 1/min:	
4	†	Charge press. hPa:	500
1st speed 1/min: 500	+	Shutoff	
Charge press. hPa: 500	+	electromagnet Volt:	
Shutoff	+	Del. quantity cm3/:	
electromagnet Volt: 12	-		(22.5027.50)
Overflow : 41.70	.83.40		
quantity cm3/10s: (26.70.	98.40) 🗼	Mech. shutoff:	
2nd speed 1/min: 2300	+	Mech. Abstellung:	

1st speed 1/min: 2300 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet volt: 12 Electr. shutoff: 1st speed 1/min: 400 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Idle delivery: 1st speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 6.00...10.00 1000s.: (3.00...13.00) Dispersion cm3/: 2.5 1000s.: (3.0) 1/min: 450 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...6.00 1000s.: (0.00...6.00) Automatic starting fuel delivery: 1st spe∈d 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 22.00...32.00 1000s.: (21.00...33.00) 2nd speed 1/min: 480 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 17.70...22.30 1000s.: (16.00...24.00) 3rd speed 1/min: 200 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 46.00...48.00 1000s.: (42.00...52.00) 4th speed 1/min: 100 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 40.00...50.00 1000s.: (35.00...55.00) Shutoff electromagnet: Cut-in

Mounting and assembly dimensions: Designation mm: 3,2...3,4 KF mm: 6,4...6,6 mm: 1,4...1,6 mm: 3,9 MS

SVS max. ADA stroke

mm: 3,8 mm: 17.0...19,0 XK XL mm: 9,6...13,0

Remarks:

K₀2

min voltage

Rated voltage

: 10.0 : 12.0

Note inst. in remarks column

Test scheet : ONA 3,4 A T Edition : 08.04.91 replaces : 03.11.89 Calibrating oil : ISO-4113

Injection pump : VE6/10F1800R209 Type number : 0 460 406 048

Customer Part-No. :

Customer-specific information Customer : ONAN

Engine : L634T

TEST BENCH REQUIREMENTS

Calibrating oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening

bar: 147.00...150.00 Pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840

Start of delivery

Prestroke mm: 0,2

(from BDC): +-0.02(0.04)

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1400 Speed Charge press. hPa: 800

Setting value mm: 3.90...4.30

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1400 Speed Charge press hPa: 800

Setting value bar: 4.80...5.40

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1400 Speed Charge press. hPa: 800

Del. quantity cm3/ 1000s.: 58.50...59.50

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 700

Del. quantity cm3/

1000s.: 44.00...45.00

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

1/min: 400 Speed

Del. quantity cm3/

1000s.: 14.00...18.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (3.0)

Full-load speed regulation

1/min: 1900 Speed Charge press hPa: 800

Del. quantity cm3/

1000s.: 37.00...43.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100 Del. quantity cm3/: 42.00...92.00

1000s.: 42.00 mind

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery: Inj.-qty.dif.measurement:

Speed 1/min: 1400 Charge press hPa: 800

Inj.-qty. cm3/ difference 1000s.: 9.50...17.50

Shutoff

electromagnet Volt: 12 TD-travel dif.measurement

correttore anticipo iniezione (SV) Shutoff 1.Speed 1/min: 1400 electromagnet Volt: 12 Charge press hPa: 800 TD-travel Overlow quantity at overflow valve: difference mm: 0.50...0.70 Shutoff 1st speed 1/min: 700 electromagnet Volt: 12 SP press.—dif.measurement Charge press. hPa: 800 Shutoff pompa di mandata (FP) electromagnet Volt: 12 1.Speed 1/min: 1400 : 41.70...83.40 Overflow Charge press hPa: 800 cm3/10s: (26.70...98.40) quantity Supply pump 1/min: 1800 2nd speed pressure Charge press. hPa: 800 difference bar: 0,10...0,3 Shutoff Shutoff electromagnet Volt: 12 : 55.60...139.00 electromagnet Volt: 12 Overflow cm3/10s: (40.60...153.00) quantity Inspection-pump test specifications Test specifications in parentheses Delivery-quant. and breakaway char.: Timing device characteristic: 1nd speed 1/min: 700 2nd speed 1/min: 1800 Charge-air pressure-setting hPa: 300 mm: 6,5 Charge press hPa: 800 point mm: 5.40...6.20 TD travel LDA-stroke mm: (5.10...6.50) Shutoff Shutoff electromagnet Volt: 12 Del. quantity cm3/: 50.50...51.50 electromagnet Volt: 12 3rd speed 1/min: 1400 1000s.: (48.70...53.30) 1/min: 2000 hPa: 800 Charge press 2nd speed TD travel mm: 3.90...4.30 Charge press. hPa: 800 mm: (3.40...4.80) Shutoff Shutoff electromagnet Volt: 12 Del. quantity cm3/: 5,50...14,50 1000s.: electromagnet Volt: 12 1/min: 800 4th speed 1/min: 2050 hPa: 800 Charge press 3rd speed mm: 1.00...1.80 Charge press. hPa: 800 Shutoff TD travel mm: (0.70, ..., 2.10)Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...3.00 electromagnet Volt: 12 1000s.: -Supply-pump pressure characteristic: 5th speed 1/min: 1900 Charge press. hPa: 800 1st speed 1/min: 800 Shutoff Charge press. hPa: 800 Supply-pump bar: 2.70...3.30 pressure Shutoff Charge press. hPa: 800 electromagnet Volt: 12 1/min: 1400 2nd speed Shutoff Charge press. hPa: 800 electromagnet Volt: 12 1000s: (22.00...32.00)
9th speed 1/min: 1800 Supply-pump pressure bar: 4.80...5.40 Shutoff Charge press. hPa: 800 Shutoff electromagnet Volt: 12 1/min: 1800 3rd speed electromagnet Volt: 12 Del. quantity cm3/: 51.50...54.50 Charge press. hPa: 800 Supply-pump bar: 6.00...6.60 1000s.: (51.20...55.80) pressure 12th speed 1/min: 1400

Charge press. hPa: Shutoff	800	Shutoff	+. 12
electromagnet Volt:	12 T	electromagnet Vol 3rd speed 1/mi	
Del. quyntity cm3/:	58 50 50 50 I	Charge press. h	
10009	(56.7061.30)	Inj.—qty. cm3	7 000 17 50
18th speed 1/min:		difference 1000S	7. 7.30(7.30
Charge press. hPa:		Shutoff	4. 40
Shutoff	12	electromagnet Vol	τ: 12
electromagnet Volt:	12 00 15 00		
Del. quantity cm3/:		TD-travel dif.mea	
10005.:	(42.2046.80)	correttore antici	po injezione (SV):
20th speed 1/min:		1st speed 1/mi	
Charge press. hPa:	800 +	Charge press. h	a: 800
Shutoff	+	To-travel	: 0.500.70
electromagnet Volt:	12 +	difference m	m: -
Del. quantity cm3/:	58.0061,00	Shutoff	
1000s.:	- +	electromagnet Vol	t: 12
	1	o coo cromagnio c	
Mech. shutoff:	1	SP pressdif.mea	surement:
Mech. Abstellung:	1	pompa di mandata	
. com / Doto cea ig.	1	1st speed 1/mi	
1st speed 1/min:	1900		
Pol guartity cm7/s	1000 7 m	Charge press. hF	a: 000
Del. quantity cm3/:	0.005.00	Supply pump-	. 0 40 0 70
10008.:	- +	pressure	: 0.100.30
Shutoff	. +	difference ba	r: -
electromagnet volt:	12 +	Shutoff	
	+	electromagnet Vol	t: 12
Electr. shutoff:	+		
	+	Automatic startir	g fuel delivery:
1st speed 1/min:	350 +		•
Del. quantity cm3/:	0.003.00	1st speed 1/mi	n: 220
1000s.:	(0.003.00)	Shutoff	
	+	electromagnet Vol	t: 12
Idle delivery:	1	Del. quantity cm3	
	1		.: (42.0092.00)
1st speed 1/min:	400	10000	(42.00/2.00/
Shutoff	1	2nd speed 1/mi	n 300
electromagnet Volt:	12	Shutoff	11. 500
Del. quantity cm3/:		electromagnet Vol	+. 10
1000s •	(12.0020.00)	Celtrollagriet vol	7. 10 00 /2 00
		Del. quantity cm3	/: 10.0042.00
Dispersion cm3/:		10005	.: (18.0042.00)
10008.:			400
2nd speed 1/min:	450 †		n: 100
Shutoff	. +	Shutoff	
electromagnet Volt:		electromagnet Vol	
Del. quantity cm3/:	0.006.00	Del. quantity cm3	/: 42.0092.00
1000s.:	(0.006.00)	1000s	.: (42.0092.00)
3rd speed 1/min:	350		
Del. quantity cm3/:	26.5033.50	Shutoff electroma	anet:
1000s.:	(26.0034.00)		3
Shutoff	-	Cut-in	
electromagnet Volt:	12 🗼	min voltage	: 10,0
	1	Rated voltage	: 12,0
Load-dependent start	t of delivery:	nated voltage	. 12,0
Injqty.dif.measure		Mounting and asso	mbly dimensions:
ing. quy. arr. measure	T T	Mounting and asse	mocy difficus foris:
1st speed 1/min:	1/00	Docionation	
		Designation	an a
Injqty. cm3/:			m: -
difference 1000S.:	- +		m: 5,66,0
	+	MS m	m: 0,61,0

 SVS max.
 mm: 1,7

 LDA stroke
 mm: 6,5

 XK
 mm: 20,0...22,0

 XL
 mm: 10,1...13,5

Remarks:

Note inst. in remarks column

Test scheet : VMA 3,4 B Edition : 18.02.91 : 22.04.88 replaces Calibrating oil : ISO-4113

Injection pump : VE6/10F1400R209-1 Type number : 0 460 406 052

Customer Part-No. :

Customer-specific information Customer : ONAN

Engine : L634T-Auto

TEST BENCH REQUIREMENTS

Calibrating oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening

bar: 147.00...150.00 Pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery Prestroke mm: 0,2

(from BDC): +0.02(0.04)

Injection pump setting values Test specifications in parentheses

Timing device travel

Speed 1/min: 1400 Charge press. hPa: 800

Setting value mm: 4.30...4.70

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1100 Speed Charge press hPa: 800

Setting value bar: 3.80...4.40

electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1100 Charge press. hPa: 800

Del. quantity cm3/ 1000s.: 61.00...62.00

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.0 1000s.: (3.0)

Full-load del. w/out charge press.:

1/min: 700 Speed

Del. quantity cm3/

1000s.: 44.50...45.50

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 400

Del. quantity cm3/ 1000s.: 14.00...18.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000S.: (3.0)

Full-load speed regulation

1/min: 1480 Speed Charge press hPa: 800 Det. quantity cm3/

1000s.: 42.00...46.00

Start:

1/min: 100 Speed

Del. quantity cm3/: 42.00...92.00

1000s.: 42.00 mind

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

1/min: 1100 Speed Charge press hPa: 12

Inj.—qty. cm3/ difference 1000S:: 8.50...16.50

Shutoff

electromagnet Volt: 12 TD-travel dif.measurement

correttore anticipo iniezione (SV) Shutoff 1.Speed 1/min: 1100 electromagnet Volt: 12 hPa: 800 Charge press TD-travel Overlow quantity at overflow valve: mm: 0.50...0.70 difference Shutoff 1/min: 700 1st speed electromagnet Volt: 12 Charge press. hPa: 800 Shutoff SP press.-dif.measurement pompa di mandata (FP) electromagnet Volt: 12 : 41.70...83.40 1.Speed 1/min: 1100 Overflow | hPa: 800 cm3/10s: (26.70...98.40) Charge press *quantity* Supply pump 1/min: 1400 2nd speed Charge press. hPa: 800 pressure difference bar: 0,10...0,30 Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 : 55.60...139.00 Overflow | cm3/10s: (40.60...153.00) quantity Inspection pump test specifications Test specifications in parentheses Delivery-quant. and breakaway char.: Timing device characteristic: 1/min: 700 1nd speed 1/min: 1400 3rd speed Charge-air pressure-setting hPa: 800 Charge press point hPa: 200 mm: 4.30...4.70 TD travel LDA-stroke mm: 6,5 mm: (3.80...5.20) Shutoff Shutoff electromagnet Volt: 12 Del. quantity cm3/: 47.00...48.00 electromagnet Volt: 12 1000s.: (45.20...49.80) 1/min: 800 4th speed hPa: 800 Charge press 2nd speed 1/min: 1560 TD travel mm: 1.40...2.20 Charge press. hPa: 800 mm: (1.10...2.50) Shutoff Shutoff electromagnet Volt: 12 Del. quantity cm3/: 14.00...22.00 1000s.: electromagnet Volt: 12 5th speed 1/min: 1100 Charge press. hPa: 800 1/min: 1600 3rd speed mm: 2.70...3.30 TD travel Charge press. hPa: 800 mm: (2.30...3.70) Shutoff Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,00...3.00 electromagnet Volt: 12 1000s.: -Supply-pump pressure characteristic: 5th speed 1/min: 1480 Charge press. hPa: 800 1/min: 700 1st speed Shutoff Charge press. hPa: 800 electromagnet Volt: 12 Del. quantity cm3/: 42.00...46.00 1000S.: (40.00...48.00) 9th speed 1/min: 1400 Supply-pump pressure bar: 2.30...2.90 Shutoff electromagnet Volt: 12 2nd speed 1/min: 1100 Charge press. hPa: 800 Shutoff Charge press. hPa: 800 electromagnet Volt: 12 Supply-pump Del. quantity cm3/: 56.50...59.50 pressure bar: 3.80...4.40 1000s.: (55.70...60.30) Shutoff 1/min: 1100 12th speed electromagnet Volt: 12 Charge press. hPa: 800 1/min: 1400 3rd speed Shutoff Charge press. hPa: 800 electromagnet Volt: 12 Del. quyntity cm3/: 61.00...62.00 Supply-pump 1000s.: (59,20...63.80) 1/min: 700 bar: 4.80...5.40 pressure 18th speed

Charge press. hPa: Shutoff		†	Shutoff electromagnet Volt: 12
electromagnet Volt: Del, quantity cm3/: 1000S.: 20th speed 1/min: Charge press. hPa: Shutoff	44.5045.50 (42.7047.30) 700	† † † †	TD-travel dif.measurement: correttore anticipo iniezione (SV) 1st speed 1/min: 1100 Charge press. hPa: 800 TD-travel : 0.500.70
electromagnet Volt: Del. quantity cm3/: 1000S.:	57.5060,50	† †	TD-travel : 0.500.70 difference mm: - Shutoff electromagnet Volt: 12
Mech. shutoff: Mech. Abstellung:	4.40	†	SP pressdif.measurement: pompa di mandata (FP): 1st speed 1/min: 1100
1st speed 1/min: Del. quantity cm3/: 1000S.:	1400 0.003.00 (0.003.00)	†	Charge press. hPa: 800 Supply pump- pressure : 0.100.30
Shutoff electromagnet volt:		†	difference bar: - Shutoff electromagnet Volt: 12
Electr. shutoff:		Ī	Automatic starting fuel delivery:
1st speed 1/min: Del. quantity cm3/:	350 0.003.00 (0.003.00)	+	1st speed 1/min: 220 Shutoff
Idle delivery:	(0.003.00)	Ŧ	electromagnet Volt: 12 Del. quantity cm3/: 42.0092.00 1000S.: -
1st speed 1/min: Shutoff	400	Ŧ	2nd speed 1/min: 300
electromagnet Volt: Del. quantity cm3/:	12 14.0018.00 (12.0020.00) 3.0	Ī	Shutoff electromagnet Volt: 12 Del. quantity cm3/: 18.0042.00 1000s.: -
1000S:: 2nd speed 1/min: Shutoff	(3.0)	<u> </u>	4th speed 1/min: 100 Shutoff
electromagnet Volt: Del. quantity cm3/: 1000s.:	0.006.00 (0.006.00)	T +	electromagnet Volt: 12 Del. quantity cm3/: 42.0092.00 1000s.: -
Shutoff		Ŧ	Shutoff electromagnet:
electromagnet Volt: Del. quantity cm3/: 1000S.:	26.5033.50	1	Cut-in min voltage : 10.0 Rated voltage : 12.0
Load-dependent star Injqty.dif.measur		†	Mounting and assembly dimensions:
1st speed 1/min: Injqty. cm3/ : difference 1000S.: Shutoff	5.007.00	T T	Designation K mm: - KF mm: 5.66,0 MS mm: 0,61,0
electromagnet Volt: 3rd speed 1/min: Charge press. hPa: Injqty. cm3/: difference 1000S.:	1100 800 8.5016.50	+++++	SVS max. mm: 1,7 LDA stroke mm: 6,5 XK mm: 20,022,0 XL mm: 8,912,3
Willerence IUUD.:		Ī	Remarks:

Note inst. in remarks column

: ONA 3,4 C Test scheet : 18.02.91 Edition : 03.11.89 replaces Calibrating oil : ISO-4113

Injection pump : VE6/10F1500R209-2 : 0 460 406 060 Type number

Customer Part-No. :

Customer-specific information Customer : ONAN

Engine : L634TA HD

TEST BENCH REQUIREMENTS

Calibrating oil return temp.

with thermometer : 40.00...48.00 Electronically : 42,00...50,00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

assembly : 1 688 901 000

Operaina

bar: 147.00...150.00 Pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery

Prestroke

te mm: 0,2 (from BDC): +0,02(0,04)

Indicator setting

Piston stroke mm: 1.0 Outlet : A

Injection pump setting values Test specifications in parentheses

Timing device travel

1/min: 1400 Speed Charge press. hPa: 800

Setting value mm: 4.30...4.70

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1100 Speed

Charge press hPa: 800 Setting value bar: 3.80...4.40

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1400 Charge press. hPa: 800 Del. quantity cm3/

1000s.: 55.00...56.00

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.0 10008:: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 700

Del. quantity cm3/

1000s.: 42.50...43.50

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

1/min: 400

Del. quantity cm3/

1000s.: 14.00...18.00

Shutoff

electromagnet Voit: 12 Del. quantity cm3/: 3.0 1000s.: (3.0)

Full-load speed regulation

1/min: 1640 Speed Charge press hPa: 800 Del. quantity cm3/ 1000s.: 20.00...24.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 42.00...92.00

1000s.: 42.00 mind

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

Speed 1/min: 1100 -	- Shutoff
Charge press hPa: 800	electromagnet Volt: 12
Inj. qty. cm3/	3rd speed 1/min: 1400
difference 1000s.: 8.5016.50	Charge press. hPa: 800
Shutoff	Supply-pump
electromagnet Volt: 12	pressure bar: 4.805.40
TD-travel dif.measurement	Shutoff
correttore anticipo iniezione (SV)	electromagnet Volt: 12
1. Speed 1/min: 1100	
Charge press hPa: 800	Overlow quantity at overflow valve:
TD-travel difference mm: 0.500.70	1-t
Shutoff	1st speed 1/min: 700
electromagnet Volt: 12	Charge press. hPa: 800 Shutoff
SP press.—dif.measurement	
pompa di mandata (FP)	electromagnet Volt: 12 Overflow: 41.7083.40
1. Speed 1/min: 1100	quantity cm3/10s: (26.7098.40)
Charge press hPa: 800	2nd speed 1/min: 1500
Supply pump	Charge press. hPa: 800
pressure	Shutoff
difference bar: 0.100.30	electromagnet Volt: 12
Shutoff	Overflow : 55.60139.00
electromagnet Volt: 12	quantity cm3/10s: (40.60153.00
	- 400.000
Inspection pump test specifications -	Delivery-quant. and breakaway char.
Test specifications in parentheses -	
•	1
Timing-device characteristic:	1nd speed 1/min: 700
	Charge-air pressure-setting
3rd speed 1/min: 1400 -	point hPa: 350
Charge press hPa: 800 -	LDA-stroke mm: 6,5
TD travel mm: 4.304.70 -	Shutoff
mm: (3.805.20)	electromagnet Volt: 12
Shutoff -	Del. quantity cm3/: 48.0049.00
electromagnet Volt: 12	1000\$.: (46.2050.80)
4th speed 1/min: 800	3rd speed
Charge press hPa: 800 -	Charge press. hPa: 800
TD travel mm: 1.402.20	Shutoff
mm: (1.102.50)	electromagnet Volt: 12
Shutoff -	Del. quantity cm3/: 0,003.00
electromagnet Volt: 12	1000s.: -
5th speed 1/min: 1100	5th speed 1/min: 1640
Charge press. hPa: 800 TD travel mm: 2.703.30	Charge press. hPa: 800
TD travel mm: 2.703.30 - mm: (2.303.70) -	Shutoff
Shutoff	electromagnet Volt: 12
	Del. quantity cm3/: 20.0024.00
electromagnet Volt: 12	1000\$.: (18.0026.00) 8th speed
Supply-pump pressure characteristic:	
outputy pulip pressure that acter istric.	- Charge press. hPa: 800 - Shutoff
1st speed 1/min: 700	electromagnet Volt: 12
Charge press. hPa: 800	Del. quantity cm3/: 43.0051,00
Supply-pump	10008.: -
pressure bar: 2.302.90	9th speed 1/min: 1500
Shutoff	- Charge press. hPa: 800
electromagnet Volt: 12	- Shutoff
2nd speed 1/min: 1100	electromagnet Volt: 12
Charge press. hPa: 800	Del. quantity cm3/: 52.5055.50
Supply-pump	1000s.: (51.7056.30)
pressure 5ar: 3.804.40	12th speed 1/min: 1400

Charge press. hPa: 8 Shutoff electromagnet Volt: 1	<u>+</u>	3rd speed 1/min: Charge press. hPa: Ini_nty cm3/:	800
Del. quyntity cm3/: 5 10005.: (55.5056.50 (53.7058.30)	Injqty. cm3/: difference 1000S.: Shutoff	-
18th speed 1/min: 7 Shutoff	700	electromagnet Volt:	
electromagnet Volt: 1 Del. quantity cm3/: 4		TD-travel dif.measur correttore anticipo 1st speed 1/min:	iniezione (SV)
20th speed 1/min: 7 Charge press. hPa: 8 Shutoff	'00 	Charge press. hPa: TD-travel : difference mm:	800 0.500.70
electromagnet Volt: 1 Del. quantity cm3/: 5 1000S.: -	55.0058.00	Shutoff electromagnet Volt:	
ar 1 1	+	SP pressdif.measur	
Mech. shutoff: Mech. Abstellung:	1	pompa di mandata (FF 1st speed 1/min:	?): 1100
The office of th	Ţ	Charge press. hPa:	
1st speed 1/min: 1		Supply pump-	
	(0.003.00)	difference bar:	0.100.30
Shutoff electromagnet volt: 1	2	Shutoff electromagnet Volt:	12
Electr. shutoff:	‡	Automatic starting 1	fuel delivery:
1st speed 1/min: 3 Del. quantity cm3/: 0 1000s.: 0	350 0.003.00 (0.003.00)	1st speed 1/min: Shutoff electromagnet Volt:	
Idle delivery:	+	Del. quantity cm3/: 1000s.:	42.0092.00
1st speed 1/min: 4 Shutoff	+	2nd speed 1/min: Shutoff	300
electromagnet Volt: 13 Del. quantity cm3/: 14 1000S.: (elactromagnet Volt: Del. quantity cm3/: 1000s.:	18.0042.00
Dispersion cm3/: 3	3.0 +		
2nd speed 1/min: 4		4th speed 1/min: Shutoff	100
Shutoff	+	electromagnet Volt:	12
electromagnet Volt: 13 Del. quantity cm3/: 0).006.00	Del. quantity cm3/: 1000s.:	42.0092.00
3rd speed 1/min: 3	0.006.00)	Shutoff electromagne	et:
Shutoff	+	oracorr ececer anagra	
electromagnet Volt: 1		Cut-in ,	10.0
Del. quantity cm3/: 20 1000s.: -		min voltage : Rated voltage :	10.0 12.0
Load dependent start (Injqty.dif.measurem		Mounting and assembl	ly dimensions:
• • •	+	Designation	
1st speed 1/min: 1 Injqty. cm3/ : 5 difference 1000s.: -	.007.00 	K mm: KF mm:	5,66.0
Shutoff	I	SVS max. mm:	0,61,0
electromagnet Volt: 12	2	LDA stroke mm:	6,5

Remarks:

Note inst. in remarks column

Test scheet : ONA 3,4 E Edition : 18.02.91

replaces

Calibrating oil : ISO-4113

Injection pump : VE6/10F1800R209-5 Type number : 0 460 406 065

Customer Part-No. :

Customer-specific information

Customer

Engine : L634T

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening

Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery

Prestroke mm: 0.2

(from BDC): +0.02(0.04)

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1400 Speed Charge press. hPa: 800

Setting value mm: 3.90...4.30

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1400 Speed Charge press hPa: 800

Setting value bar: 4.80...5.40 Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1400 Charge press. hPa: 800

Del. quantity cm3/ 1000s.: 58.50...59.50

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 700

Del. quantity cm3/

1000s.: 44.00...45.00

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

1/min: 400 Speed

Del. quantity cm3/

1000s.: 14.00...18.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (3.0)

Full-load speed regulation

Speed 1/min: 1900 Charge press hPa: 800

Del. quantity cm3/

1000s.: 37.00...43.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100

Del. quantity cm3/: 42.00...92.00

1000s.: 42.00 mind

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery: Inj.-qty.dif.measurement:

1/min: 1400 Speed Charge press hPa: 800

Inj.-qty. cm3/

difference 1000s.: 9.50...17.50

Shutoff

electromagnet Volt: 12 TD-travel dif.measurement

correttore anticipo iniezione (SV) 1.Speed 1/min: 1400 Charge press hPa: 800 Supply-pump bar: 6.00...6.60 pressure bar: -TD-travel Shutoff difference mm: 0.50...0.70 electromagnet Volt: 12 Shutoff electromagnet Volt: 12 Overlow quantity at overflow valve: SP press.—dif.measurement pempa di mandata (FP) 1st speed 1/min: 700 1/min: 1400 1.Speed Charge press. hPa: 800 Shutoff Charge press hPa: 800 Supply pump electromagnet Volt: 12 : 41.70...83.40 pressure Overflow | difference bar: 0,10...0,30 cm3/10s: (26.70...98.40) quantity Shutoff 2nd speed 1/min: 1800 electromagnet Volt: 12 Charge press. hPa: 800 Shutoff Inspection-pump test specifications electromagnet Volt: 12 Test specifications in parentheses : 55.60...139.00 Overflow cm3/10s: (40.60...153.00) quantity Timing—device characteristic: Delivery-quant. and breakaway char.: 2nd speed 1/min: 1800 Charge press hPa: 800 mm: 5.40...6.20 TD travel 1nd speed 1/min: 700 mm: (5.10...6.50) Charge-air pressure-setting Shutoff point hPa: 300 electromagnet Volt: 12 3rd speed 1/min: 1400 Shutoff electromagnet Volt: 12 hPa: 800 Del. quantity cm3/: 50.50...51.50 Charge press mm: 3.90...4.30 1000s.: (48.70...53.30) TD travel mm: (3.40...4.80) 1/min: 2000 2nd speed Shutoff Charge press. hPa: 800 electromagnet Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 5,50...14,50 1000s.: -1/min: 800 4th speed Charge press hPa: 800 mm: 1.00...1.80 TD travel mm: (0.70...2.10)3rd speed 1/min: 2050 Shutoff Charge press. hPa: 800 electromagnet Volt: 12 Shutoff electromagnet Volt: 12 Supply-pump pressure characteristic: Del. quantity cm3/: 0.00...3.00 1000s.: -1st speed 1/min: 800 5th speed 1/min: 1900 Charge press. hPa: 800 Charge press. hPa: 800 Supply-pump Shutoff bar: 2.70...3.30 pressure bar: -Shutoff electromagnet Volt: 12 2nd speed 1/min: 1400 Charge press. hPa: 800 Charge press. hPa: 800 Shutoff Supply-pump electromagnet Volt: 12 Del. quantity cm3/: 23.00...31.00 bar: 4.80...5.40 pressure bar: -1000s.: (22.00...32.00) Shutoff 9th speed 1/min: 1800 electromagnet Volt: 12 Charge press. hPa: 800 Shutoff 1/min: 1800 3rd speed Charge press. hPa: 800 electromagnet Volt: 12

Del. quantity cm3/: 51.5054.50 1000s.: (50.7055.30)	Injqty. cm3/ : 5.007.00
12th speed 1/min: 1400	+ difference 1000s.: Shutoff
Charge press. hPa: 800	+ electromagnet Volt: 12
Shutoff	3rd speed 1/min: 1400
electromagnet Volt: 12	+ Charge press. hPa: 800
Del. quyntity cm3/: 58.5059.50	+ Injqty. cm3/: 9.5017.50
1000s.: (56,7061.30)	+ difference 1000s.: -
18th speed 1/min: 700	+ Shutoff
Shutoff	+ electromagnet Volt: 12
electromagnet Volt: 12	+
Del. quantity cm3/: 44.0045.00	† TD-travel dif.measurement:
1000s.: (42.2046.80)	<pre>correttore anticipo iniezione (SV):</pre>
20th speed 1/min: 700	1st speed 1/min: 1400
Charge press. hPa: 800 Shutoff	Charge press. hPa: 800
electromagnet Volt: 12	TD-travel : 0.500.70
Del. quantity cm3/: 57.5060,50	+ difference mm: - + Shutoff
10005.: -	electromagnet Volt: 12
.000.	T ecectronagnet vocc. 12
Mech. shutoff:	SP pressdif.measurement:
Mech. Abstellung:	pompa di mandata (FP):
•	1st speed 1/min: 1400
1st speed 1/min: 1800	+ Charge press. hPa: 800
Del. quantity_cm3/: 0.003.00	+ Supply pump-
1000s.: (0.003.00)	+ pressure : 0.100.30
Shutoff	+ difference bar: -
electromagnet volt: 12	+ Shutoff
Clasta shutoff.	electromagnet Volt: 12
Electr. shutoff:	Automotic stanting fuel delivery
1st speed 1/min: 350	Automatic starting fuel delivery:
Del. quantity cm3/: 0.003.00	T 1st speed 1/min: 220
10008.: (0.003.00)	+ Shutoff
	electromagnet Volt: 12
Idle delivery:	Del. quantity cm3/: 42.0092.00
•	1000s.: -
1st speed 1/min: 400	+
Shutoff	2nd speed 1/min: 300
electromagnet Volt: 12	Shutoff
Del. quantity cm3/: 14.0018.00	+ electromagnet Volt: 12
1000s.: (12.0020.00)	Del. quantity cm3/: 18.0042.00
Dispersion cm3/: 3.0 1000s.: (3.0)	1000s.: -
2nd speed 1/min: 450	T 4th speed 1/min: 100
Shutoff	+ Shutoff
electromagnet Volt: 12	electromagnet Volt: 12
Del. quantity cm3/: 0.006.00	Del. quantity cm3/: 42.0092.00
1000s.: -	1000s.: -
3rd spead 1/min: 350	+
Del. quantity cm3/: 26.5033.50	Shutoff electromagnet:
1000s.: (26.0034.00)	+
Shutoff	- Cut-in
electromagnet Volt: 12	min voltage : 10.0
	Rated voltage : 12.0
Load dependent start of delivery:	†
Inj.—qty.dif.measurement:	+ Mounting and assembly dimensions:
1st speed 1/min: 1400	Designation
15t Specu 1/Mint 1400	+ Designation - K mm:-
•	+ K

KF mm: 5,6...6,0 mm: 0,6...1,0 svs max. mm: 1,7

Remarks:

:

Note inst. in remarks column

: ONA 3,4 F Test scheet Edition : 18.02.91

replaces

Calibrating oil : ISO-4113

Injection pump : VE6/10F1500R209-7 : 0 460 406 067 Type number

Customer Part-No. :

Customer-specific information

Customer : ONAN

Engine : L634TA HD

TEST BENCH REQUIREMENTS

Calibrating oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening

bar: 147.00...150.00 Pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length

Start of delivery

Prestroke mm: 0,2

(from BDC): +-0.02(0.04)

Indicator setting Piston stroke mm: 1.0 Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1500 Charge press. hPa: 800

Setting value mm: 3.80...4.20

Shutoff

electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100

Charge press hPa: 800 Setting value bar: 3.80...4.40 Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1400 Charge press. hPa: 800 Del. quantity cm3/ 1000s.: 56.50...57.50

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.0 1000s.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 700

Del. quantity cm3/ 1000s.: 39.50...40.50

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

1/min: 400 Speed

Del. quantity cm3/

1000s.: 13.00...17.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (3.0)

Full-load speed regulation

1/min: 1640 Speed Charge press hPa: 800

Del. quantity cm3/ 1000s.: 10.00...14.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100

Del. quantity cm3/: 37.00...87.00 mind 1000s.: 37.00

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:	+ 1nd speed 1/min: 700
7-1	+ Charge-air pressure-setting
3rd speed 1/min: 1500	+ point hPa: 400
Charge press hPa: 800 TD travel mm: 3.804.20	+ Shutoff
	+ electromagnet Volt: 12
mm: (3.304.70) Shutoff	bel. quantity cm3/: 47.5048.50
	1000s.: (45.7050.30)
electromagnet Volt: 12 4th speed 1/min: 800	- 3rd speed 1/min: 1700
	+ Charge press. hPa: 800
Charge press hPa: 800 TD travel mm: 0.901.70	+ Shutoff
	electromagnet Volt: 12
mm: (0.602.00) Shutoff	bel. quantity cm3/: 0.003.00
electromagnet Volt: 12	1000s.: - 5th speed 1/min: 1640
5th speed 1/min: 1100	
Charge press. hPa: 800	+ Charge press. hPa: 800 + Shutoff
TD travel mm: 2.202.80	
mm: (1.803.20)	electromagnet Volt: 12
Shutoff	Del. quantity cm3/: 10.0014.00
electromagnet Volt: 12	1000S.: (8.0016.00) 8th speed 1/min: 1580
etectrollagilet vott. 12	
Supply-pump pressure characteristic:	+ Charge press. hPa: 800 + Shutoff
supply pulp pressure that acter is the.	electromagnet Volt: 12
1st speed 1/min: 700	Del. quantity cm3/: 33.0041.00
Charge press. hPa: 800	1000S.: -
Supply-pump	9th speed 1/min: 1500
pressure bar: 2.302.90	Charge press. hPa: 800
Shutoff	Shutoff
electromagnet Volt: 12	electromagnet Volt: 12
2nd speed 1/min: 1100	Del. quantity cm3/: 53.0056.00
Charge press. hPa: 800	10008: (52.2056.80)
Supply-pump	12th speed 1/min: 1400
pressure bar: 3.804.40	Charge press. hPa: 800
Shutoff	+ Shutoff
electromagnet Volt: 12	electromagnet Volt: 12
3rd speed 1/min: 1500	Del. quyntity cm3/: 56.5057.50
Charge press. hPa: 800	± 1000s: (54.7059.30)
Supply-pump	18th speed 1/min: 700
pressure bar: 5.105.70	- Shutoff
Shutoff	electromagnet Volt: 12
electromagnet Volt: 12	Del. quantity cm3/: 39.5040.50
3	1000s.: (37.7042.30)
Overlow quantity at overflow valve:	20th speed 1/min: 700
	- Charge press. hPa: 800
1st speed 1/min: 700	+ Shutoff
Charge press. hPa: 800	+ electromagnet Volt: 12
Shutoff	+ Del. quantity cm3/: 55.5058.50
electromagnet Volt: 12	10005.: -
Overflow : 41.7083.40	
quantity cm3/10s: (26.7098.40)	+ Mech. shutoff:
2nd speed 1/min: 1500	+ Mech. Abstellung:
Charge press. hPa: 800	+
Shutoff	+ 1st speed 1/min: 1500
electromagnet Volt: 12	+ Del. quantity cm3/: 0.003.00
Overflow : 55.60139.00	+ 1000s.: (0.003.00)
quantity cm3/10s: (40.60153.00)	+ Shutoff
	+ electromagnet volt: 12
Delivery-quant. and breakaway char.:	+
	+ Electr. shutoff:
	+

1/min: 350 1st speed Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet volt: -Idle delivery: 1st speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 13.00...17.00 1000s.: (11.00...19.00) Dispersion cm3/: 3.01000s.: (3.0) 1/min: 450 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...6.00 1000s.: -1/min: 350 3rd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 26.50...33.50 1000s.: -Automatic starting fuel delivery: 1/min: 220 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 37.00...87.00 1000s.: -2nd speed 1/min: 300 Shutoff electromagnet Voit: 12 Del. quantity cm3/: 13.00...37.00 1000s.: -4th speed 1/min: 100 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 37.00...87.00 1000s.: -Shutoff electromagnet: Cut-in : 10.0 min voltage Rated voltage : 12.0 Mounting and assembly dimensions: Designation K mm: mm: 5,6...6,0 mm: 0,6...1,0 KF MS SVS max. mm: 1.9

Remarks:

K20

Note inst. in remarks column

Test scheet : ONA 3,4 G Edition : 18.02.91

replaces

Calibrating oil : ISO-4113

Injection pump : VE6/10F1800R421 Type number : 0 460 406 069

Customer Part-No. :

Customer-specific information

Customer : ONAN

Engine : 6ATA3.4 AUTOM.

TEST BENCH REQUIREMENTS

Calibrating oil return temp.

with thermometer: 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening

bar: 147.00...150.00 Pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery

Prestroke mm: 0.3

(from BDC): +-0.02(0.04)

Indicator setting

Piston stroke mm: 1.0 Outlet | : A

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1600 Speed Charge press. hPa: 1000

Setting value mm: 3.20...3.60

Shutoff

electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1600 Charge press hPa: 1000 Setting value bar: 6.00...6.60

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1600 Charge press. hPa: 1000

Del. quantity cm3/

1000s.: 56.50...57.50

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 400 Speed

Del. quantity cm3/

1000s.: 37.50...38.50

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 400

Del. quantity cm3/ 1000s.: 15.00...19.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (3.0)

Full-load speed regulation

1/min: 1900 Speed Charge press hPa: 1000

Del. quantity cm3/ 1000s.: 30.50...36.50

Start:

Speed 1/min: 100 Del. quantity cm3/: 40.00...80.00 mind 1000s.: 40.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

1/min: 1600 Speed Charge press hPa: 1000

Inj.-qty. cm3/

difference 1000s.: 16.0...24.00

Shutoff	+	Supply-pump
electromagnet Volt: 12	+	pressure bar: 6.707.30
TD-travel dif.measurement	+	Shutoff
correttore anticipo iniezione (SV)	+	electromagnet Volt: 12
1. Speed 1/min: 1600	+	3
Charge press hPa: 1000 TD-travel	†	Overlow quantity at overflow valve:
difference mm: 0,400,60	Ι	1st speed 1/min: 500
Shutoff	Ι	Charge press. hPa: 1000
electromagnet Volt: 12	1	Shutoff
SP press.—dif.measurement	Ι	
pompa di mandata (FP)	T	electromagnet Volt: 12
1. Speed 1/min: 1600	Τ	Overflow : 41.7083.40 quantity cm3/10s: (26.7098.40)
Change appear has 1000	T	2nd and 1/min. 1900
Charge press hPa: 1000	T	2nd speed 1/min: 1800
Supply pump	Ť	Charge press. hPa: 1000
pressure	†	Shutoff
difference bar: 0.100,30	†	electromagnet Volt: 12
Shutoff	+	Overflow : 55.60139.00
electromagnet Volt: 12	+	quantity cm3/10s: (40.60153.00)
	+	
Inspection pump test specifications	+	Delivery-quant. and breakaway char.:
Test specifications in parentheses	+	
	+	
Timing-device characteristic:	+	1nd speed 1/min: 800
•	+	Charge-air pressure-setting
2nd speed 1/min: 1800	+	point hPa: 400
Charge press hPa: 1000	+	Shutoff
TD travel mm: 3.804.60	+	electromagnet Volt: 12
mm: (3.504.90)	1	Del. quantity cm3/: 51.5052.50
Shutoff	1	10008.: (49.7054.30)
electromagnet Volt: 12	1	2nd speed 1/min: 1990
3rd speed 1/min: 1600	Ι	Charge press. hPa: 1000
Charge press hPa: 1000	T	Shutoff
TD travel mm: 3.203.60	T	
mm: (2.704.10)	T	electromagnet Volt: 12
	T	Del. quantity cm3/: 0.003.00
Shutoff	T	1000\$.: (0.003.00)
electromagnet Volt: 12	†	3rd speed 1/min: 1910
4th speed 1/min: 1200	†	Charge press. hPa: 1000
Charge press hPa: 1000	†	Shutoff
TD travel mm: 1.702.50	+	electromagnet Volt: 12
mm: (1.402.80)	+	Del. quantity cm3/: 15.0035.00
Shutoff	+	1000\$.: (15.0035.00)
electromagnet Volt: 12	+	5th speed 1/min: 1900
	+	Charge press. hPa: 1000
Supply-pump pressure characteristic:	+	Shutoff
	+	electromagnet Volt: 12
1st speed 1/min: 1200	+	Del. quantity cm3/: 30.5036.50
Charge press. hPa: 1000	+	1000s.: (29.5037.50)
Supply-pump	+	9th speed 1/min: 1800
pressure bar: 4.605.20	+	Charge press. hPa: 1000
Shutoff	1	Shutoff
electromagnet Volt: 12	1	electromagnet Volt: 12
2nd speed 1/min: 1600	1	Del. quantity cm3/: 53.0056.00
Charge press. hPa: 1000	1	10008:: (52.0057.00)
Supply-pump	1	12th speed 1/min: 1600
pressure bar: 6.006.60	1	Charge press. hPa: 1000
Shutoff	1	Shutoff
electromagnet Volt: 12	I	
3rd speed 1/min: 1800	Ι	electromagnet Volt: 12
Charge press. hPa: 1000	1	Del. quyntity cm3/: 56.5057.50 1000s.: (54.5059.50)
THE STATE OF THE S	1	しいしつ。 しつキュンフェンファンバノ

18th speed	+ Charge press. hPa: 1000
Shutoff	+ TD-travel : 0.400.60
electromagnet Volt: 12	+ difference mm: -
Del. quantity cm3/: 37.5038.50	+ Shutoff
1000\$.: (35.7040.30)	+ electromagnet Volt: 12
20th speed 1/min: 500	+ 2nd speed 1/min: 1600
Charge press. hPa: 1000	+ Charge press. hPa: 1000
Shutoff	+ Supply pump-
electromagnet Volt: 12	+ pressure : 0.100.30
Del. quantity cm3/: 56.0062.00 1000s.: -	+ difference bar: -
10005.: =	+ Shutoff
Mech. shutoff:	+ electromagnet Volt: 12
Mech. Abstellung:	Automotic stanting fuel delivery
rectt. Abstecturg.	Automatic starting fuel delivery:
1st speed 1/min: 1800	I 1st speed 1/min: 220
Del. quantity cm3/: 0.003.00	+ Shutoff
10008.: (0.003.00)	+ electromagnet Volt: 12
Shutoff	- Del. quantity cm3/: 40.0080.00
electromagnet volt: 12	10005.: -
`	+
Electr. shutoff: \$	+ 2nd speed 1/min: 300
,	+ Shutoff
1st speed 1/min: 400	+ electromagnet Volt: 12
Del. quantity cm3/: 0.003.00	+ Del. quantity cm3/: 25.0045.00
1000s.: (0.0)3.00)	+ 1000s.: -
Shutoff	+
electromagnet volt: -	+ 4th speed 1/min: 100
e (1 1 1 2 .	+ Shutoff
Idle delivery:	+ electromagnet Volt: 12
1ah an and 1 /min . / 00	+ Del. quantity cm3/: 40.0080.00
1st speed 1/min: 400 Shutoff	1000s.: -
electromagnet Volt: 12	Chutoff alcotnomorpote
Del. quantity_cm3/: 15.0019.00	Shutoff electromagnet:
10008:: (13.0021.00)	- Cut-in
Dispersion cm3/: 3.0	+ min voltage : 10.0
1000s.: (3.0)	+ Rated voltage : 12.0
2nd speed 1/min: 490	1
Shutoff	+ Mounting and assembly dimensions:
electromagnet Volt: 12	+
Del. quantity cm3/: 0.003.00	+ Designation
1000\$.: (0.003.00)	+ K mm: -
total discondent stank of det	+ KF mm: 5.66.0
Load-dependent start of delivery:	+ MS mm: 0,61,0
Inj.—qty.dif.measurement:	+ XK mm: 20,022,0
2nd speed 1/min: 1600	T XL mm: 11,414,8
Charge press. hPa: 1000	Remarks:
Inj.—qty. cm3/: 10.0012.00	Nellal K3.
difference 1000S:: -	<u> </u>
Shutoff	+
electromagnet Volt: 12	+
4th speed 1/min: 1600	+
Charge press. hPa: 1000	+
Inj. qty. cm3/: 16.0024.00	+
difference 1000s.: -	+
Shutoff	+
electromagnet Volt: 12	†
2nd speed 1/min: 1600	+

Note inst. in remarks column

Test scheet : ONA 3,4 H : 18.02.91 Edition

replaces

Calibrating oil : ISO-4113

Injection pump : VE6/10F1800R437 Type number : 0 460 406 070

Customer Part-No. :

Customer-specific information

Customer : ONAN

: 6AT 3.4 IND. Engine

KW: 104 Power Speed 1/min: 1800

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

assembly : 1 688 901 000

Openina |

bar: 147.00...150.00 Pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840

Start of delivery

Prestroke mm: 0,3

(from BDC): +0.02(0.04)

Indicator setting Piston stroke mm: 1,0 Outlet | : A

Injection pump setting values Test specifications in parentheses

Timing-device travel

Speed 1/min: 1600

Charge press. hPa: 1000 Setting value mm: 4.50...4.90

Shutoff

electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1200 Charge press hPa: 1000

Setting value bar: 3.90...4.50

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1600 Charge press. hPa: 1000

Del. quantity cm3/

1000s.: 58.50...59.50

Shutoff

electromagnet Volt: 12 cm3/: 3.0Dispersion 1000s.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 400

Del. quantity cm3/

1000s.: 38.00...39.00

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 400

Del. quantity cm3/ 1000s.: 14.50...18.50

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000S.: (3.0)

Full-load speed regulation

1/min: 1870 Speed Charge press hPa: 1000

Del. quantity cm3/

1000s.: 46.50...52.50

electromagnet Volt: 12

Start:

Speed 1/min: 100

Del. quantity cm3/: 40.00...80.00 mind 1000s.: 40.00

Shutoff

electromagnet Volt: 12

Inspection pump test specifications

K24

Test specifications in parentheses : 41.70...83.40 Overflow cm3/10s: (26.70...98.40) 1/min: 1800 *quantity* Timing-device characteristic: 2nd speed Charge press. hPa: 1000 2nd speed 1/min: 1800 Shutoff hPa: 1000 Charge press electromagnet Volt: 12 : 55.60...139.00 mm: 5.20...6.00 TD travel Overflow mm: (4.90...6.30) cm3/10s: (40.60...153.00) quantity Shutoff electromagnet Volt: 12 Delivery-quant. and breakaway char.: 1/min: 1600 3rd speed Charge press hPa: 1000 mm: 4.50...4.90 TD travel 1/min: 800 1nd speed mm: (4.00...5.40) Charge-air pressure-setting Shutoff point hPa: 400 electromagnet Volt: 12 4th speed 1/min: 1200 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 52.00 53.00 1000S.: (50.20...54.80) Charge press hPa: 1000 mm: 2.60...3.40 TD travel mm: (2.30...3.70) 1/min: 1900 2nd speed Charge press. hPa: 100L Shutoff electromagnet Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...3.00 Supply-pump pressure characteristic: 1000S.: (0.00...5 00) 1/min: 1895 1st speed 1/min: 500 3rd speed Charge press. hPa: 1000 Charge press. hPa: 1000 Supply-pump Shutoff bar: 1.50...2.10 pressure electromagnet Volt: 12 bar: (1.30...2.30) Del. quantity cm3/: 15.00...55.00 Shutoff 1000s.: (25.00...45.00) 1/min: 1870 electromagnet Volt: 12 5th speed 1/min: 1200 2nd speed Charge press. hPa: 1000 Charge press. hPa: 1000 Shutoff Supply-pump electromagnet Volt: 12 Del. quantity cm3/: 46.50...52.50 1000s.: (45.50...53.50) bar: 3.90...4.50 pressure bar: (3.70...4.70) 1/min: 1800 Shutoff 9th speed electromagnet Volt: 12 3rd speed 1/min: 1600 Charge press. hPa: 1000 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 55.00...58.00 Charge press. hPa: 1000 Supply-pump bar: 5.30...5.90 pressure 1000s.: (54.20...58.80) bar: (5.10...6.10) 12th speed 1/min: 1600 Shutoff Charge press. hPa: 1000 electromagnet Volt: 12 Shutoff 1/min: 1800 4th speed electromagnet Volt: 12 Del. quyntity cm3/: 58.50...59.50 1000s.: (56.70...61.30) Charge press. hPa: 1000 Supply-pump bar: 6.00...6.60 pressure 1/min: 400 18th speed bar: (5.80...6.80) Charge press. hPa: Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 Del. quantity cm3/: 38.00...39.00 1000s.: (36.20...40.80) Overlow quantity at overflow valve: 1/min: 500 20th speed 1st speed 1/min: 500 Charge press. hPa: 1000 Charge press. hPa: 1000 Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12

Del. quantity cm3/: 54.00...57.00 1000s.: -Mech. shutoff: Mech. Abstellung: 1st speed 1/min: 1800 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet volt: 12 Electr. shutoff: 1/min: 400 1st speed Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) electromagnet volt: -Idle delivery: 1/min: 400 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 14.50...18.50 1000s.: (12.50...20.50) cm3/: 3.0 Dispersion 1000s.: (3.0) 1/min: 640 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Automatic starting fuel delivery: 1st speed 1/min: 220 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 40.00...80.00 1000s.: -2nd speed 1/min: 350 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 25.00...45.00 1000s.: -1/min: 100 4th speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 40.00...80.00 1000s.: -Shutoff electromagnet: Cut-in min voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

KF mm: 5.6...6.0 mm: 0.6...1,0 mm: 20,0...22,0 XL mm: 11.5...14.9

Remarks:

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K26

Note inst. in remarks column

Test scheet : FIA 2,7 A Edition : 18.02.91 : 16.10.86 replaces Calibrating oil : ISO-4113

Injection pump : VE3/11F1250L163-1 Type number : 0 460 413 002

Customer Part-No. :

Customer-specific information Customer : IVECO-FIAT

: 8035.06.200 Engine

Power KW: 38 1/min: 1250 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 020 assembly

Opening

bar: 172.00...175.00 Pressure

Perforated-plate

diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery

Prestroke mm: 0.2

(from BDC): +-0.02(0.04)

Injection pump setting values Test specifications in parentheses

Timing device travel

Speed 1/min: 1000

Setting value mm: 2.80...3.20

Shutoff

electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000

Setting value bar: 5.70...6.30

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 800

Del. quantity cm3/

1000s.: 62.50...63.50

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.5 1000s.: (4.0)

Low-idle speed regulation

Speed 1/min: 400

Del. quantity cm3/

1000s.: 15.50...19.50

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.5 1000s.: (3.5)

Full-load speed regulation

Speed 1/min: 1350

Del. quantity cm3/ 1000s.: 37.00...43.00

Start:

Speed 1/min: 100 Del. quantity cm3/: 80.00...130.00

mind 1000s.: 80.00

Shutoff

electromagnet Volt: 12

Inspection—pump test specifications Test specifications in parentheses

Timing device characteristic:

2nd speed 1/min: 1250

mm: 4.40...5.20 TD travel mm: (4.10...5.50)

Shutoff

electromagnet Volt: 12 3rd speed 1/min: 1000

TD travel mm: 2.80...3.20 mm: (2.30...3.70)

Shutoff

electromagnet Volt: 12 1/min: 800 4th speed

mm: 1.10...1.90 TD travel Shutoff mm: (0.80...2.20) electromagnet Volt: 12 Del. quyntity cm3/: 62.50...63.50 1000s.: (60.00...66.00) 20th speed 1/min: 500 Shutoff electromagnet Volt: 12 Supply-pump pressure characteristic: Shutoff electromagnet Volt: 12 Del. quantity cm3/: 53.50...56.50 1000s.: (52.00...58.00) 1st speed 1/min: 500 Supply-pump bar: 3.40...4.00 pressure Shutoff Mech. shutoff: electromagnet Volt: 12 Mech. Abstellung: 1/min: 1000 2nd speed Supply-pump 1st speed 1/min: 1250 bar: 5.70...6.30 Del. quantity cm3/: 0.00...3.00 pressure 1/min: 1250 1000s.: (0.00...3.00) 4th speed Supply-pump Shutoff bar: 6.80...7.40 pressure electromagnet volt: 12 Shutoff electromagnet Volt: 12 Electr. shutoff: Overlow quantity at overflow valve: 1st speed 1/min: 400 Del. quantity cm3/: 0.00...3.00 1st speed 1/min: 500 1000s.: (0.00...3.00) Shutoff Shutoff electromagnet Volt: 12 electromagnet volt: -: 41.70...83.40 Overflow cm3/10s: (26.70...98.40) quantity Idle delivery: 1/min: 1250 2nd speed Shutoff 1/min: 400 1st speed electromagnet Volt: 12 Shutoff : 55.60...139.00 Overflow | electromagnet Volt: 12 Del. quantity cm3/: 15.50...19.50 cm3/10s: (40.60...153.00) quantity 1000s.: (13.50...21.50) cm3/: 3.5 1000s.: (3.5) Delivery-quant. and breakaway char.: Dispersion 1/min: 475 2nd speed 1/min: 1450 2nd speed Shutoff Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...1.00 1000s.: electromagnet Volt: 12 Del. quantity cm3/: 0.00...1.00 1000s.: -1/min: 425 3rd speed 1/min: 1400 3rd speed Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 Del. quantity cm3/: 6.00...12.00 Del. quantity cm3/: 6.00...14.00 1000s.: (5.00...15.00) 1000s.: (5.00...13.00) 1/min: 1350 5th speed Automatic starting fuel delivery: Shutoff electromagnet Volt: 12 1/min: 150 1st speed Del. quantity cm3/: 37.00...43.00 1000s.: (34.00...46.00) 9th speed 1/min: 1250 Shutoff electromagnet Volt: 12
Del. quantity cm3/: 90.00...140.00
1000s.: -Shutoff electromagnet Volt: 12 Del. quantity cm3/: 61.50...64.50 1/min: 250 2nd speed 1000s.: (60.00...66.00) Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 Del. quantity_cm3/: 30.00...50.00 12th speed 1/min: 800 1000s.: -

4th speed Shutoff 1/min: 100

electromagnet Volt: 12
Del. quantity cm3/: 80.00...130.00
1000S:: -

Shutoff electromagnet:

Cut-in

min voltage : 10.0 Rated voltage : 12.0 min voltage

Mounting and assembly dimensions:

Designation

K mm: mm: 5.0...5.4 mm: 1.4...1.8 mm: 4.7 KF MS SVS max.

:

Remarks:

Note inst. in remarks column

: STE 2,6K1 Test scheet : 18.02.91 Edition : 16.02.86 replaces Calibrating oil : ISO-4113

Injection pump : VE3/11F1200R263-1 Type number : 0 460 413 007

Customer Part-No. :

Customer-specific information Customer : STEYR

Engine : ''D311-85

KW: 41 Power 1/min: 1200 Speed

TEST BENCH REQUIREMENTS

Calibrating oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assembly

Openina

bar: 147.00...150.00 Pressure

Test inj. tuking : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery Prestroke mm: -(from BDC): -

Indicator setting Piston stroke mm: 1,0 Outlet : A

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1000 Speed

Setting value mm: 5.80...6.20

Supply-pump pressure

1/min: 1000 Speed Setting value bar: 6.20...6.80

Full-load del. with charge press.:

Speed 1/min: 1000

Del. quantity cm3/

1000s.: 78.00...79.00

Dispersion cm3/: 3.51000s.: (3.5)

Low-idle speed regulation

Speed 1/min: 300

Del. quantity cm3/

1000S.: 11.00...15.00 Del. quantity cm3/: 3.5 1000s.: (3.5)

Full-load speed regulation

Speed 1/min: 1300

Del. quantity cm3/

1000s.: 17.00...23.00

Start:

Speed 1/min: 100

Del. quantity cm3/: 84.00...134.00 mind 1000s.: 84.00

mind

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 1200 2nd speed

mm: 6.90...7.70 mm: (6.60...8.00) TD travel

3rd speed 1/min: 1000

TD travel mm: 5.80...6.20 mm: (5.30...6.70)

1/min: 500 4th speed

mm: 1.60...2.40 TD travel mm: (1.30...2.70)

Supply-pump pressure characteristic:

1st speed 1/min: 1200

Supply-pump

bar: 7.00...7.60 pressure

1/min: 1000 2nd speed

Supply-pump

bar: 6.20...6.80 pressure

3rd speed 1/min: 500

L02

Supply-pump 3rd speed 1/min: 400 bar: 4.30...4.90 pressure Del. quantity cm3/: 0.00...2.60 1000s.: -Overlow quantity at overflow valve: Automatic starting fuel delivery: 1st speed 1/min: 500 : 41.70...83.40 Overflow 1st speed 1/min: 170 *quantity* cm3/10s: (26.70...98.40) Del. quantity cm3/: 84.00...134.00 1/min: 1200 1000s.: -2nd speed : 55.60...139.00 Overflow cm3/10s: (40.60...153.00) quantity 2nd speed 1/min: 270 Del. quantity cm3/: 37.00...73.00 Delivery-quant. and breakaway char.: 1000s.: -1/min: 100 4th speed 3rd speed 1/min: 1350 Del. quantity cm3/: 84.00...134.00 Del. quantity cm3/: 0.00...2.60 1000s.: -1000s.: -5th speed 1/min: 1300 Del. quantity cm3/: 17.00...23.00 1000s.: (16.00...24.00) Shutoff electromagnet: Cut-in 1/min: 1250 8th speed min voltage Del. quantity cm3/: 45.00...53.00 Rated voltage 1000s.: (44.00...54.00) 9th speed 1/min: 1200 Mounting and assembly dimensions: Del. quantity cm3/: 74.50...77.50 1000s.: (73.70...78.30) Designation mm: 3,2...3,4 mm: 5,6...6.0 mm: 1,2...1,6 12th speed 1/min: 1000 K Teth speed 1/min: 1000
Del. quyntity cm3/: 78.00...79.00
1000S.: (76.20...89.80)
20th speed 1/min: 500
Del. quantity cm3/: 72.50...75.50
1000S.: (71.50...76.50) KF MS mm: 5,0 mm: 17,0...19,0 SVS max. XK XL mm: 12,6...16.0 Remarks: Delivery-quant. and breakaway char.: Inj.-qty.values,temp.-compensated temperatura Del. quantity cm3/: 0.00...2.60 1000s.: (0.00...2.60) Mech. shutoff: Mech. Abstellung: 1st speed 1/min: 1200 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Idle delivery: 1000s.: (9.00...17.00) cm3/: 3.5 Dispersion 1000s.: (3.5) 1/min: 330 2nd speed Del. quantity cm3/: 3.00...9.00 1000s.: (2.00...10.00)

Note inst. in remarks column

Test scheet : STE 4,0 H Edition : 18.02.91 : 30.09.86 replaces Calibrating oil : 1SO-4113

Injection pump : VE4/11F1100R94-1 Type number : 0 460 414 011

Customer Part-No. :

Customer-specific information Customer : STEYR

Engine : WD411.89/90

Power KW: 52 1/min: 1100 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assembly

Openina

bar: 147.00...150.00 Pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840

Start of delivery mm: -Prestroke (from BDC): -

Injection pump setting values Test specifications in parentheses

Timing device travel

1/min: 1000

Setting value mm: 5.20...5.60

Supply-pump pressure

1/min: 1000 Speed

Setting value bar: 5.20...5.80

Full-load del. with charge press.:

1/min: 1000

Del. quantity cm3/

1000s.: 73.50...74.50

Dispersion cm3/: 3.5 1000s.: (3.5)

Low-idle speed regulation

Speed 1/min: 300

Del. quantity cm3/

1000s.: 11.50...15.50 Del. quantity cm3/: 3.5 1000s.: (3.5)

Full-load speed regulation

1/min: 1150 Speed

Del. quantity cm3/

1000s.: 50.00...56.00

Start:

Speed 1/min: 100 Del. quantity cm3/: 70.00...120.00 mind 1090s.: 70.00

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100

mm: 5.90...6.70 mm: (5.60...7.00) TD travel

1/min: 1000 3rd speed

mm: 5.20...5.60 mm: (4.70...6.10) TD travel

1/min: 500 4th speed

TD travel mm: 0.80...1.60

mm: (0.50...1.90)

Supply-pump pressure characteristic:

1/min: 1100 1st speed

Supply-pump

bar: 5.70...6.30 pressure

1/min: 1000 2nd speed

Supply-pump

bar: 5.20...5.80 1/min: 500 pressure

3rd speed

Supply-pump

bar: 2.80...3.40 pressure

Overlow quantity at overflow valve:

1st speed 1/min: 500 Overflow : 41.70...83.40 cm3/10s: (26.70...98.40) quantity 2nd speed 1/min: 1080 Overflow : 55.60...139.00 quantity cm3/10s: (40.60...153.00) Delivery-quant. and breakaway char.: 1/min: 1270 2nd speed Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) 3rd speed 1/min: 1220 Del. quantity cm3/: 0.00...10.00 1000s.: (0.00...10.00) 1/min: 1170 4th speed Del. quantity cm3/: 10.00...40.00 1000s.: (10.00...40.00) 1/min: 1150 5th speed Del. quantity cm3/: 50.00...56.00 1000s.: (49.00...57.00) 9th speed 1/min: 1080 Del. quantity cm3/: 72.00...75.00 1000s.: (71.00...76.00) 1/min: 1000 12th speed Del. quyntity cm3/: 73.50...74.50 1000s.: (71.70...76.30) 1/min: 500 20th speed Del. quantity cm3/: 68.00...71.00 1000s.: (66.50...72.50) Mech. shutoff: Mech. Abstellung: 1st speed 1/min: 1080 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Idle delivery: 1st speed 1/min: 300 Del. quantity cm3/: 11.50...15.50 1000s.: (9.50...17.50) cm3/: 3.5 Dispersion 1000s.: (3.5)
2nd speed 1/min: 340
Del. quantity cm3/: 2.00...8.00 1000s.: (1.00...9.00) 3rd speed 1/min: 400 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Automatic starting fuel delivery: 1st speed 1/min: 170 Del. quantity cm3/: 70.00...120.00 1000s.: -

1/min: 250

Del. quantity cm3/: 35.00...65.00 1000s.: -4th speed 1/min: 100 Del. quantity cm3/: 70.00...120.00 1000s.: -Shutoff electromagnet: Cut-in : 10.0 min voltage : 12.0 Rated voltage Mounting and assembly dimensions: Designation mm: 3,2...3,4 mm: 5,1...5,5 KF MS mm: 0,8...1,2 SVS max. mm: 1.9 Remarks:

2nd speed

Note inst. in remarks column

Test scheet : FIA 3,9A : 18.02.91 Edition replaces : 08.84 Calibrating oil : ISO-4113

Injection pump : VE4/11F1250L164 Type number : 0 460 414 013

Customer Part-No. :

Customer-specific information Customer : IVECO-FIAT

Engine : 8045.05.200

KW: 58 Power 1/min: 1250 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil °C return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., par : 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 020 assembly

Openina

bar: 172.00...175.00 Pressure

Perforated plate

diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery

Prestroke mm: 0.2

(from BDC): +-0.02(0.04)

Injection pump setting values Test specifications in parentheses

Timing-device travel

Speed 1/min: 800

Setting value mm: 3.80...4.20

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 800 Speed

Setting value bar: 5.10...5.70

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 800

Del. quantity cm3/ 1000S.: 73.50...74.50

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.5 1000s.: (4.0)

Low-idle speed regulation

Speed 1/min: 350

Del. quantity cm3/

1000s.: 21.00...25.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.5 1000s.: (3.5)

Full-load speed regulation

1/min: 1350 Speed

Del. quantity cm3/

1000s.: 29.00...35.00

Start:

1/min: 100 Speed

Del. quantity cm3/: 80.00...130.00 mind 1000s.: 80.00

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1250

TD travel mm: 7.60...8.40 mm: (7.30...8.70)

Shutoff

electromagnet Volt: 12 1/min: 800 3rd speed

TD travel mm: 3.80...4.20 mm: (3.30...4.70)

Shutoff

electromagnet Volt: 12 4th speed 1/min: 500

L06

mm: 1.20...2.00 mm: (1.00...2.20) TD travel Shutoff electromagnet Volt: 12 Del. quantity cm3/: 68.50...71.50 1000s.: (67.00...73.00) Shutoff electromagnet Volt: 12 Shutoff Supply-pump pressure characteristic: electromagnet Volt: 12 1/min: 800 12th speed 1st speed 1/min: 500 Shutoff Supply-pump electromagnet Volt: 12 Del. quyntity cm3/: 73.50...74.50 1000s.: (71.00...77.00) 20th speed 1/min: 500 bar: 3.60...4.20 pressure Shutoff electromagnet Volt: 12 2nd speed 1/min: 700 Shutoff Supply-pump electromagnet Volt: 12 pressure bar: 4.30...4.60 Del. quantity cm3/: 64.00...67.00 1000s.: (62.50...68.50) Shutoff electromagnet Volt: 12 1/min: 800 3rd speed Supply-pump Delivery-quant. and breakaway char.: bar: 5.10...5.70 pressure Shutoff Ini.-aty.values/temp.-compensated electromagnet Volt: 12 temperatura 1/min: 1250 4th speed Del. quantity cm3/: 0.00...1.00 1000s.: (0.00...1.00) Supply-pump bar: 7.00...7.60 pressure Shutoff electromagnet Volt: 12 Mech. shutoff: Mech. Abstellung: Overlow quantity at overflow valve: 1st speed 1/min: 1250 1/min: 500 Del. quantity cm3/: 0.00...3.00 1st speed 1000s.: (0.00...3.00) Shuroff electromagnet Volt: 12 Shutoff : 55.60...139.00 Overflow | electromagnet volt: 12 cm3/10s: (40.60...153.00) 1/min: 1250 quantity 2nd speed Electr. shutoff: Shutoff 1/min: 350 electromagnet Volt: 12 1st speed : 55.60...139.00 Overflow Del. quantity cm3/: 0.00...3.00 quantity cm3/10s: (40.60...153.00) 1000s.: (0.00...3.00) Shutoff Delivery-quant. and breakaway char.: electromagnet volt: -Idle delivery: 1/min: 1430 2nd speed Shutoff 1/min: 350 1st speed electromagnet Volt: 12 Del. quantity_cm3/: 0.00...1.00 Shutoff electromagnet Volt: 12 1000s.: (0.00...1.00) Del. quantity cm3/: 21.00...25.00 1000s.: (19.00...27.00) 1/min: 1380 3rd speed cm3/: 3.5 Shutoff Dispersion electromagnet Volt: 12 1000\$.: (3.5) Del. quantity cm3/: 6.00...16.00 1000s.: (6.00...16.00) 2nd speed 1/min: 425 Shutoff electromagnet Volt: 12
Del. quantity cm3/: 2.50...8.50
1000s.: (1.50...9.50) 5th speed 1/min: 1350 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 29.00...35.00 3rd speed 1/min: 500 1000\$.: (26.00...38.00) Shutoff 1/min: 1250 9th speed electromagnet Volt: 12

Del. quantity cm3/: 0.00...1.00 1000s.: (0.00...1.00) Automatic starting fuel delivery: 1/min: 150 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 90.00...140.00 1000s.: -1/min: 250 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 45.00...65.00 1000s.: -4th speed 1/min: 100 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 80.00...130.00 1000s.: -Shutoff electromagnet: Cut-in : 10.0 : 12.0 min voltage Rated voltage Mounting and assembly dimensions: Designation K mm: mm: 5.3...5.7 mm: 1,4...1,8 KF MS SVS max. mm: 4.6 Remarks:

Note inst. in remarks column

Test scheet : STE 4,0 K Edition : 18.02.91 replaces : 10.85 Calibrating oil : ISO-4113

Injection pump : VE4/11F1200R94-2 : 0 460 414 014 Type number

Customer Part-No. :

Customer—specific information

Customer : SNF

Engine : WD411.45 47kW

Power KW: 47 1/min: 1200 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil °C return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening

bar: 147.00...150.00 Pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840

Start of delivery Prestroke mm: -(from BDC): -

Injection pump setting values Test specifications in parentheses

Timing device travel

Speed 1/min: 800 Setting value mm: 3.40...3.80

Supply-pump pressure

1/min: 800 Speed

Setting value bar: 4.70...5.30

Full-load del. with charge press.:

1/min: 1000 Speed

Del. quantity cm3/ 1000s.: 70.50...71.50 Dispersion cm3/: 3.5 1000s.: (3.5)

Low-idle speed regulation

1/min: 300 Speed

Del. quantity cm3/

1000s.: 21.00...25.00

Del. quantity cm3/: 3.5

1000s.: (3.5)

Full-load speed regulation

Speed 1/min: 1300

Del. quantity cm3/

1000s.: 19.00...25.00

Start:

1/min: 100 Speed

Del. quantity cm3/: 78.00...128.00 mind 1000s.: 78.00

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1200

TD travel mm: 6.60...7.40

mm: (6.30...7.70)

3rd speed 1/min: 800

TD travel

4th speed

mm: 3.40...3.80 mm: (2.90...4.30) 1/min: 500 mm: 0.70...1.50 TD travel

mm: (0.40...1.80)

Supply-pump pressure characteristic:

1/min: 1200 1st speed

Supply-pump

bar: 6.50...7.10 pressure

2nd speed 1/min: 800

Supply-pump

pressure bar: 4.70...5.30

3rd speed 1/min: 500

Supply-pump

bar: 3.20...3.80 pressure

Overlow quantity at overflow valve:

1st speed 1/min: 500 Overflow : 41.70...83.40 cm3/10s: (26.70...98.40) *quantity* 1/min: 1180 2nd speed : 55.60...139.00 Overflow cm3/10s: (40.60...153.00) quantity Delivery-quant. and breakaway char.: 2nd speed 1/min: 1340 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) 5th speed 1/min: 1300 Del. quantity cm3/: 19.00...25.00 1000s.: (18.00...26.00) 8th speed 1/min: 1250 Del. quantity cm3/: 51.00...59.00 1000s.: (50.00...60.00) 1/min: 1180 9th speed Del. quantity cm3/: 69.50...72.50 1000s.: (68.50...73.50) 12th speed 1/min: 1000 Del. quyntity cm3/: 70.50...71.50 1000s.: (68.70...73.30) 20th speed 1/min: 500 Del. quantity cm3/: 66.50...69.50 1000s.: (65.00...71.00) Mech. shutoff: Mech. Abstellung: 1st speed 1/min: 1180 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Idle delivery: 1st speed 1/min: 300
Del. quantity cm3/: 21.00...25.00
1000S.: (19.00...27.00)
Dispersion cm3/: 3.5 1000s.: (3.5) 2nd speed 1/min: 350 Del. quantity cm3/: 5.00...11.00 1000s.: (3.50...12.50) 3rd speed 1/min: 400 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Automatic starting fuel delivery: 1/min: 170 1st speed Del. quantity cm3/: 78.00...128.00 1000S.: (78.00...128.00) 2nd speed 1/min: 250 Del. quantity cm3/: 35.00...65.00

1000s.: (35.00...65.00)

1/min: 100 4th speed Del. quantity cm3/: 78.00...128.00 **1000s.: (78.00...128.00)** Shutoff electromagnet: Cut-in min voltage Rated voltage Mounting and assembly dimensions: Designation mm: 3,2...3,4 mm: 5,3...5,7 mm: 0,8...1,2 K KF MS SVS max. mm: 3,1 Remarks:

Note inst. in remarks column

Test scheet : FIA 3,6 C Edition : 18.02.91 : 09.85 replaces Calibrating oil : ISO-4113

: VE4/11F1250L164-2 Injection pump : 0 460 414 024 Type number

Customer Part-No. :

Customer—specific information Customer : IVECO-FIAT

Engine : 8045.06.220

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42,00...50,00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 020 assembly

Opening

bar: 172.00...175.00 Pressure

Perforated plate

mm: 0.6 diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery

Prestroke mm: 0.2

(from BDC): +-0.02(0.04)

Indicator setting

Piston stroke mm: 1,0 Outlet. : A

Injection-pump setting values Test specifications in parentheses

Timing device travel

1/min: 800 Speed

Setting value mm: 3.00...3.40

Shutoff

electromagnet Volt: 12

Supply-pump pressure

§၁eed 1/min: 800

tting value bar: 4.10...4.70

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 800

Del. quantity cm3/

1000s.: 63.50...64.50

Shutoff

electromagnet Volt: 12 cm3/: 4.0 Dispersion 1000s.: (4.0)

Low-idle speed regulation

Speed 1/min: 350

Del. quantity cm3/ 1000s.: 23.00...27.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.5 1000s.: (3.5)

Full-load speed regulation

Speed 1/min: 1350

Del. quantity cm3/

1000s.: 29.00...35.00

Start:

Speed 1/min: 100 Del. quantity cm3/: 90.00...140.00 mind 1000s.: 90.00

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1250

mm: 5.40...6.20 mm: (5.10...6.50) TD travel

Shutoff

electromagnet Volt: 12 3rd speed 1/min: 800

TD travel mm: 3.00...3.40

mm: (2.50...3.90)

Shutoff

electromagnet Volt: 12

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4th speed 1/min: 600 TD travel mm: 1.202.00	Del. quantity cm3/: 29.0035.00 10005: (26.0038.00)
mm: (0.902.30) Shutoff	9th speed 1/min: 1250 Shutoff
electromagnet Volt: 12	electromagnet Volt: 12
5th speed 1/min: 1000	Pol guartity on 7/ 5/ 00 57 00
TD travel mm: 4.895.60	Del. quantity cm3/: 54.0057.00 1000s.: (52.0059.00)
mm: (4.505.90)	
	Shutoff
Shutoff	electromagnet Volt: 12
electromagnet Volt: 12	12th speed 1/min: 800
	Shutoff
Supply-pump pressure characteristic:	electromagnet Volt: 12
4 1 4 1 400	Del. quyntity cm3/: 63.5064.50
1st speed 1/min: 600	10005.: (60,5067.50)
Supply-pump	20th speed 1/min: 500
pressure bar: 3.203.80	Shutoff
Shutoff	+ electromagnet Volt: 12
electromagnet Volt: 12	Del. quantity cm3/: 57.0061.00
Shutoff	1000s.: (55.5062.50)
electromagnet Volt: 12	+
3rd speed 1/min: 800	Mech. shutoff:
Supply-pump -	Mech. Abstellung:
pressure bar: 4.104.70	+
Shutoff	1st speed
electromagnet Volt: 12	Del. quantity cm3/: 0.003.00
4th speed 1/min: 1250	1000s.: (0.003.00)
Supply-pump -	Shutoff
pressure bar: 6.106.70	electromagnet volt: 12
Shutoff	3.10
electromagnet Volt: 12	Electr. shutoff:
Overlow quantity at overflow valve:	1st speed 1/min: 350
	Del. quantity cm3/: 0.003.00
1st speed 1/min: 500	10005.: (0.003.00)
Shutoff	Shutoff
electromagnet Volt: 12	electromagnet volt: -
Overflow : 41.7083.40	Cecer anagnee voer.
quantity cm3/10s: (26.7098.40)	Idle delivery:
2nd speed 1/min: 1250	Tate decivery.
Shutoff	1st speed 1/min: 350
electromagnet Volt: 12	Shutoff
Overflow : 55.60139.00	electromagnet Volt: 12
quantity cm3/10s: (40.60153.00)	Del. quantity cm3/: 23.0027.00
quarterey (115) 103: (40:00:::155:00)	10008:: (21.0029.00)
Delivery-quant. and breakaway char.:	Dispersion cm3/: 3.5
beervery quarter and preakaway chart.	10008.: (3.5)
2nd speed 1/min: 1410	+ 2nd speed 1/min: 425 + Shutoff
Shutoff	
	electromagnet Volt: 12
electromagnet Volt: 12 Del. quantity cm3/: 0.003.00	Del. quantity cm3/: 4.0010.00
1000S.: (0.003.00)	1000S.: (3.0011.00)
	3rd speed 1/min: 480
3rd speed 1/min: 1380 - Shutoff -	Shutoff
	electromagnet Volt: 12
electromagnet Volt: 12	Del. quantity cm3/: 0.003.00
Del. quantity cm3/: 9.0017.00	1000s.: (0.003.00)
1000S.: (8.0018.00)	Automatic attention food of the
5th speed 1/min: 1350	Automatic starting fuel delivery:
Shutoff -	1 44 47
electromagnet Volt: 12	1st speed 1/min: 150

Shutoff electromagnet Volt: 12 Del. quantity cm3/: 100.00...150.00 1000s.: (100.00...150.00) 2nd speed 1/min: 250 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 30.00...50.00 1000s.: (30.00...50.00) 4th speed 1/min: 100 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 90.00...140.00 1000S.: (90.00...140.00) Shutoff electromagnet: Cut-in min voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions: Designation K mm: mm: 5,0...5,4 mm: 1,4...1,8 mm: 4,3 KF MS SVS max. Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS Note inst. in remarks column : PER 2,0 B Test scheet Edition : 18.02.91 replaces : 09.05.89 Calibrating oil : ISO-4113 : VE4/11F2250R229 Injection pump : 0 460 414 030 Type number Customer Part-No. : Customer-specific information Customer : PERKINS Engine : T 4.20 TEST BENCH REQUIREMENTS Calibrating-oil return temp. with thermometer : 40.00...48.00 Electronically : 42.00...50.00 Inlet press., bar: 0.30...0.40 Calibrating nozzle-holder assembly : 1 688 901 022 Openina Pressure bar: 130.00...133.00 Test inj. tubing : 1 680 750 073 Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 450 Start of delivery Prestroke mm: -(from BDC): -Start of delivery block Piston stroke mm: 1,00 mm: +0.02(0.06)Outlet Injection-pump setting values Test specifications in parentheses

Supply-pump pressure Speed 1/min: 1500 Charge press hPa: 800 Setting value bar: 7.10...7.70 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Full-load del. with charge press.: 1/min: 1250 Charge press. hPa: 800 Del. quantity cm3/ 1000s.: 63.00...64.00 KSB/AFB Voit: 12 valve Shutoff electromagnet Volt: 12 cm3/: 4.0 Dispersion 1000s.: (5.0) Full-load del. w/out charge press.: Speed 1/min: 500 Del. quantity cm3/ 1000s.: 17.30...18.30 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Dispersion cm3/: 4.0 1000s.: (4.0) Low-idle speed regulation 1/min: 400 Del. quantity cm3/ 1000s.: 10.00...12.00 KSB/AFB Volt: 12 valve Shutoff electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (4.0) Full-load speed regulation 1/min: 2500 Speed Charge press hPa: 800 Del. quantity cm3/ 1000s.: 23.50...25.50 Start:

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AFB/AFB

valve Shutoff Volt: 12

electromagnet Volt: 12

Speed

Timing-device travel

1/min: 1500

Charge press. hPa: 800 Setting value mm: 3.10...3.50

	+	Supply-pump	
Speed 1/min: 100	+		6.106.70
Del. quantity cm3/: 62.0098.00	+	KSB/AFB	
mind 1000s.: 62.00	+	valve Volt:	12
KSB/AFB	+	Shutoff	40
Valve Volt: 12	+	electromagnet Volt:	12
Shutoff	+	2nd speed 1/min:	
electromagnet Voit: 12	+	Charge press. hPa:	800
Thomaskian number of successions	†	Supply-pump	7 40 7 70
Inspection-pump test specifications	†		7.107.70
Test specifications in parentheses	†	KSB/AFB	40
Timing doving characteristics	†	valve Volt:	12
Timing device characteristic:	Ť	Shutoff	12
2nd speed 1/min: 2000	Ť	electromagnet Volt: 3rd speed 1/min:	2000
2nd speed 1/min: 2000 Charge press hPa: 800	T		
TD travel mm: 6.006.80	T	Charge press. hPa:	000
mm: (5.707.10)	T	Supply-pump bank	8.108.70
KSB/AFB	T	pressure bar: KSB/AFB	0.100.70
valve Volt: 12	Ι	valve Volt:	12
Shutoff	I	Shutoff	12
electromagnet Volt: 12	I	electromagnet Volt:	12
3rd speed 1/min: 1500	I	etectromagnet vott.	12
Charge press Pa: 800	I	Overlow quantity at	overflow valves
TD travel mm: 3.103.50	I	over tow quantity at	over itom varve.
mm: (2.703.90)	Ι	1st speed 1/min:	500
KSB/AFB	I	KSB/AFB	200
valve Volt: 12	I	valve Volt:	12
Shutoff	1	Shutoff	12
electromagnet Volt: 12	1	electromagnet Volt:	12
4th speed 1/min: 1000	1	Overflow :	41 70 83 40
Charge press hPa: 800	1	quantity cm3/10s:	
TD travel mm: 0.601.40	1	2nd speed 1/min:	
mm: (0.301.70)	1	Charge press. hPa:	
KSB/AFB	1	KSB/AFB	000
valve Volt: 12	1	valve Volt:	12
Shutoff	1	Shutoff	
electromagnet Volt: 12	+	electromagnet Volt:	12
8th speed 1/min: 800	+	Overflow :	55.60139.00
Charge press. hPa: 800	+		(40.60153.00)
TD travel mm: 1,203.20 B	1	quarter to y	(10.00711130100)
mm: (1,003.40)B	+	Delivery-quant. and	breakaway char.:
KSB/AFB	+	4	
valve Volt: -	+		
Shutoff	+	1nd speed 1/min:	800
electromagnet Volt: 12	+	Charge-air pressure-	-setting
9th speed 1/min: 500	+	point hPa:	
Charge press. hPa: 800	+	LDA-stroke mm:	6,5
TD travel mm: 1.902.10 A	+	KSB/AFB	
mm: (1.202.80) A	+	valve Volt:	12
KSB/AFB	+	Shutoff	
valve Volt: -	+	electromagnet Volt:	
Shutoff	+	Del. quantity cm3/:	
electromagnet Volt: 12	+	1000s.:	(30.9037.90)
	+	3rd speed 1/min:	
Supply-pump pressure characteristic:	+	Charge press. hPa:	800
4	+	KSB/AFB	
1st speed	+	valve Volt:	12
Charge press. hPa: 800	+	Shutoff	
	+	electromagnet Volt:	12

1000c	(0.0010.00)	1000c : (/ 0)
5th speed 1/min:		1000S.: (4.0)
		2nd speed 1/min: 500
Charge press. hPa:	OUU +	KSB/AFB
KSB/AFB	12	valve Voit: 12
valve Volt:	12 +	Shutoff
Shutoff	+	electromagnet Volt: 12
electromagnet Volt:		Del. quantity cm3/: 2.008.00
Del. quantity cm3/:	23.5025.50	1000s.: (1.009.00)
1000\$.:	(20.5028.50)	
9th speed 1/min:		Automatic starting fuel delivery:
Charge press. hPa:	800	The state of the s
KSB/AFB	-	
valve Volt:	12	2nd speed 1/min: 350
Shutoff	4	KSB/AFB
electromagnet Volt:	12	valve Volt: 12
Del. quantity and/:	66.0070.00	Shutoff
	(65.0071.00)	electromagnet Volt: 12
12th speed 1/min:		Del. quantity cm3/: 10.0030.00
Charge press. hPa:		1000s.: (10.0030.00)
KSB/AFB	1	
valve Volt:	12	4th speed 1/min: 100
Shutoff		KSB/AFB
electromagnet Volt:	12	valve Volt: 12
Del. quyntity cm3/:	63 00 64 00	Shutoff
10005	(61.0066,00)	electromagnet Volt: 12
18th speed 1/min:	500	Del. quantity cm3/: 62.0098.00
Charge press. hPa:		10005.: (60.00100.00
KSB/AFB	Ţ	10003 (00.00100.00
valve Volt:	12 T	Shirtoff alastromous at
Shutoff	1 ^c T	Shutoff electromagnet:
electromagnet Volt:	12 T	Cut-in
Del. quantity cm3/:		
1000c -	(14.8020.80)	
2Cth speed 1/min:	500	Rated voltage : 12.0
Charge press. hPa:		Marinetina and anomalic dimensions.
KSB/AFB	7	Mounting and assembly dimensions:
valve Volt:	12	Danismatian
Shutoff	12	Designation 7.2
	12	K mm: 3,23,4
electromagnet Volt:	16 FO (F FO	KF mm: K-OT
Del. quantity cm3/:	70,5005,50	MS mm: 0,35.0,75
1000s.:		SVS max. mm: 4,3
Manh should	†	LDA stroke mm: 6,5
Mech. shutoff:	†	XK mm: 20.022.0
mi	†	XL mm: 9,613,0
Electr. shutoff:	†	
4-6	†	Remarks:
1st speed 1/min:		•
Del. quantity cm3/:		:
1000S.:	(0.003.00)	
- 43	+	
Idle delivery:	+	
	+	
1st speed 1/min:	400 +	
KSB/AFB	+	
valve Volt:	12 +	
Shutoff	+	
electromagnet Volt:	12 +	
Del. quantity cm3/:		
	(7.0015.00)	
L16		

Note inst. in remarks column

Test scheet : LEY 2,5 A : 18.02.91 Edition

replaces

Calibrating oil : ISO-4113

Injection pump : VE4/11F2000R347 Type number : 0 460 414 069

Customer Part-No. :

Customer-specific information Customer : LANDROVER

Engine : 2,5L DI TCI

KW: -Power Speed 1/min: 2000

TEST BENCH REQUIREMENTS

Calibrating oil return temp.

with thermometer : 54.00...56.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 116 assembly

Opening |

bar: 207.00...210.00 Pressure

Perforated plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 450 x Length

Start of delivery Prestroke mm: -(from BDC): -

Start of delivery block Piston stroke mm: 1,54

mm: 0.02(0.06)

Outlet | : C

Injection-pump setting values Test specifications in parentheses Timing-device travel

Speed 1/min: 1600 Charge press. hPa: 1000

Setting value mm: 3.10...3.50

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1600 Speed Charge press hPa: 1000

Setting value bar: 6.10...6.70

electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1400 Charge press. hPa: 1000

Del. quantity cm3/ 1000s.: 63.10...64.10

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.0 1000s.: (4.0)

Full-load del. w/out charge press.:

Speed 1/min: 500 Del. quantity cm3/

1000s.: 34.50...35.50

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 350

Del. quantity cm3/

1000s.: 10.00...14.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 4.0 1000s.: (4.0)

Full-load speed regulation

Speed 1/min: 2100 Charge press hPa: 1000

Del. quantity cm3/

1000s.: 52.30...58.30

Start:

Speed 1/min: 100 Del. quantity cm3/: 80.00...130.00 mind 1000s.: 80.00

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses electromagnet Volt: 12 : 83.40...166.80 Overflow Timing device characteristic: cm3/10s: (68.40...181.80) quantity 1/min: 2000 2nd speed Delivery-quant. and breakaway char.: hPa: 1000 Charge press TD travel mm: 5.30...6.10 mm: (4.80...6.60) 1/min: 800 1nd speed Shutoff Charge-air pressure-setting point hPa: 300 electromagnet Volt: 12 1/min: 1600 hPa: 1000 mm: 3.10...3.50 3rd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 53.10...54.10 1000s.: (50.40...56.80) Charge press TD travel mm: (2.50...4.10) Shutoff 1/min: 2400 3rd speed electromagnet Volt: 12 Charge press. hPa: 1000 1/min: 1200 4th speed Shutoff Charge press hPa: 1000 electromagnet Volt: 12 Del. quantity cm3/: 0.00...15.00 1000s.: (0.00...15.00) TD travel mm: 0.70...1.50 mm: (0.20...2.00) Shutoff 5th speed 1/min: 2100 Charge press. hPa: 1000 Shutoff electromagnet Volt: 12 electromagnet Volt: 12
Del. quantity cm3/: 52.30...58.30
1000s.: (50.30...60.30) Supply-pump pressure characteristic: 1st speed 1/min: 2000 Charge press. hPa: 1000 9th speed 1/min: 2000 Supply-pump Charge press. hPa: 1000 bar: 7.40...8.00 pressure Shutoff bar: (7.20...8.20) electromagnet Volt: 12 Shutoff Del. quantity cm3/: 60.10...64.10 1000s.: (58.90...65.30) electromagnet Volt: 12 1/min: 1600 2nd speed 10th speed 1/min: 1800 Charge press. hPa: 1000 Charge press. hPa: 1000 Shutoff Supply-pump pressure bar: 6.10...6.70 electromagnet Volt: 12 Del. quantity cm3/: 0,00...1.50 1000s.: bar: (5.90...6.90) Shutoff electromagnet Volt: 12 3rd speed 1/min: 1200 12th speed 1/min: 1400 Charge press. hPa: 1000 Charge press. hPa: 1000 Shutoff Supply-pump electromagnet Volt: 12 bar: 5.00...5.60 pressure Del. quyntity cm3/: 63.10...64.10 bar: (4.80...5.80) 1000s.: (60,80...66,40) Shutoff 15th speed 1/min: 800 electromagnet Volt: 12 Charge press. hPa: 1000 1/min: 1000 4th speed Shutoff electromagnet Volt: 12 Overlow quantity at overflow valve: Del. quantity cm3/: 0,00...2,50 1000s.: -1st speed 1/min: 800 18th speed 1/min: 500 Charge press. hPa: 1000 Shutoff Shutoff electromagnet Volt: 12 Del. quantity cm3/: 34.50...35.50 electromagnet Volt: 12 Overflow: 55.60...100.08 1000s.: (31.80...38.20) cm3/10s: (40.60...115.08) quantity 1/min: 800 20th speed 1/min: 2000 2nd speed Shutoff Charge press. hPa: 1000 electromagnet Volt: 12

Shutoff

Del. quantity cm3/: 0,002.00 + 1000s.: -	Del. quantity cm3/: 39.5043.50 1000s.: (41.5041.50)
	- - Mech. shutoff:
Delivery-quant. and breakaway char.:	- - Electr. shutoff:
Injqty.values,tempcompensated temperatura	- - 1st speed
1st speed 1/min: 800 Charge-air pressure-setting point hPa: 300	1000s.: (1.501.50) Idle delivery:
Shutoff electromagnet Volt: 12 Del. quantity cm3/: 53.1054.10 1000s.: (50.4056.80) 3rd speed 1/min: 2400	- 1st speed 1/min: 350 - Shutoff - electromagnet Volt: 12 - Del. quantity cm3/: 10.0014.00
Charge press. hPa: 1000 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.0015.00	1000s: (7.0017.00) - Dispersion cm3/: 4.0 - 1000s: (4.0) - 2nd speed 1/min: 500
1000S:: (0.0015.00) 5th speed 1/min: 2100 Charge press. hPa: 1000 Shutoff	- Shutoff - electromagnet Volt: 12 - Del. quantity cm3/: 2.008.00 - 1000s.: -
electromagnet Volt: 12 Del. quantity cm3/: 52.3058.30 1000S.: (50.3060.30) 9th speed 1/min: 2000	- 3rd speed 1/min: 600 - Shutoff - electromagnet Volt: 12 - Del. quantity cm3/: 0.005.00
Charge press. hPa: 1000 Shutoff electromagnet Volt: 12 Del. quantity_cm3/: 60.1064.10	1000s.: - Automatic starting fuel delivery:
1000S:: (58.9065.30) 10th speed 1/min: 1800 Charge press. hr : 1000 Shutoff	- 1st speed 1/min: 150 - Shutoff - electromagnet Volt: 12
electromagnet Volt: 12 Del. quantity cm3/: 60.5063.50 1000S.: (62.0062.00)	- Del. quantity cm3/: 82.00132.00 - 1000s.: (80.00134.00) - 2nd speed 1/min: 350
12th speed 1/min: 1400 Charge press. hPa: 1000 Shutoff	 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 30.0070.00
electromagnet Volt: 12 Del. quantity cm3/: 63.1064.10 1000S.: (60.8066.40) 15th speed 1/min: 800	1000S:: (30.0070.00) 4th speed 1/min: 100 Shutoff
Charge press. hPa: 1000 Shutoff electromagnet Volt: 12	electromagnet Volt: 12 Del quantity cm3/: 80.00130.00 1000s.: (80.00130.00)
Del. quantity cm3/: 61.5066.50 1000S.: (64.0064.00) 18th speed 1/min: 500 Shutoff	- Shutoff electromagnet:
electromagnet Volt: 12 Del. quantity cm3/: 34.5035.50 1000s.: (31.8038.20)	- Cut-in - min voltage : 10,0 - Rated voltage : 12,0
20th speed 1/min: 800 + Shutoff	Mounting and assembly dimensions:
electromagnet Volt: 12	- Designation

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K mm: 3,2...3,4 mm: KOT mm: KOT mm: - SVS max. mm: 2,7 XK mm: 21,8...23.8 XL mm: 13,3...16.7

Remarks:

Note inst. in remarks column

Test scheet : LEY 2,5 B **Edition** : 18.02.91

replaces

Calibrating oil : ISO-4113

: VE4/11F1900R347-1 Injection pump Type number : 0 460 414 080

Customer Part-No. :

Customer-specific information Customer : LANDROVER

Engine : 2,5L DI TCI

Power KW: -1/min: 1900 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temo.

with thermometer : 54.00...56.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 116 assembly

Openina

Pressure bar: 207.00...210.00

Perforated plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 450 x Length

Start of delivery Prestroke mm: -(from BDC): -

Start of delivery block mm: 1,54 Piston stroke

mm: 0.02(0.06)

Outlet

Injection pump setting values Test specifications in parentheses Timing-device travel

1/min: 1600 Speed Charge press. hPa: 1000

Setting value mm: 3.10...3.50

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1600 Speed Charge press hPa: 1000

Setting value bar: 6.10...6.70

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1400 Speed Charge press. hPa: 1000 Del. quantity cm3/ 1000s.: 58.80...59.80

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.0 1000s.: (4.0)

Full-load del. w/out charge press.:

1/min: 500 Speed

Del. quantity cm3/

1000s.: 34.50...35.50

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 350

Del. quantity cm3/

1000s.: 10.00...14.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 4.0 1000s.: (4.0)

Full-load speed regulation

Speed 1/min: 2000 Charge press hPa: 1000 Del. quantity cm3/

1000s.: 44.50...50.50

Start:

Speed 1/min: 100 Del. quantity cm3/: 80.00...130.00

1000s.: 80.00 mind

Shutoff

electromagnet Volt: 12

Inspection pump test specifications Shutoff Test specifications in parentheses electromagnet Volt: 12 Overflow: 83.40...166.80 Timing-device characteristic: quantity cm3/10s: (68.40...181.80) 1/min: 1850 hPa: 1000 mm: 4.40...5.20 mm: (3.90...5.70) 2nd speed Delivery-quant. and breakaway char.: Charge press TD travel 1nd speed 1/min: 800 Shutoff Charge-air pressure-setting electromagnet Volt: 12 3rd speed 1/min: 1600 hPa: 300 point Shutoff Charge press hPa: 1000 electromagnet Volt: 12 Del. quantity cm3/: 46.50...47.50 1000s.: (43.80...50.20) TD travel mm: 3.10...3.50 mm: (2.50...4.10) Shutoff 1/min: 2200 3rd speed Charge press. hPa: 1000 Shutoff electromagnet Volt: 12 electromagnet volt: 12 4th speed 1/min: 1200 Charge press hPa: 1000 TD travel mm: 0.70...1.50 electromagnet Volt: 12
Del. quantity cm3/: 0.00...10.00
1000S.: (0.00...10.00)
5th speed 1/min: 2000 mm: (0.20...2.00) Shutoff electromagnet Volt: 12 Charge press. hPa: 1000 Shutoff electromagnet Volt: 12
Del. quantity cm3/: 44.50...50.50
1000\$:: (42.50...52.50) Supply-pump pressure characteristic: 1st speed 1/min: 1850 Charge press. hPa: 1000 9th speed 1/min: 1850 Charge press. hPa: 1000 Shutoff Supply-pump pressure bar: 7.40...8.00 electromagnet Volt: 12
Del. quantity cm3/: 56.00...60.00
1000S.: (54.80...61.20) bar: (7.20...8.20) Shutoff electromagnet Volt: 12 2nd speed 1/min: 1600 Charge press. hPa: 1000 Charge press. hPa: 1000 Shutoff Supply-pump electromagnet Volt: 12 De!. quantity cm3/: 0.00...1.50 pressure bar: 6.10...6.70 bar: (5.90...6.90) 1000s.: -Shutoff 12th speed 1/min: 1400 Charge press. hPa: 1000 Shutoff electromagnet Volt: 12 3rd speed 1/min: 1200 Charge press. hPa: 1000 electromagnet Volt: 12 Del. quyntity cm3/: 57.80...58.80 1000s.: (55.5...61.10) Supply-pump pressure bar: 5.00...5.60 bar: (4.80...5.80) 1/min: 800 15th speed Shutoff Charge press. hPa: 1000 electromagnet Volt: 12 Shutoff 4th speed 1/min: 1000 electromagnet Volt: 12 Del. quantity cm3/: 0.00...2.50 1000s.: -Overlow quantity at overflow valve: 18th speed 1/min: 500 1/min: 800 1st speed Shutoff Charge press. hPa: 1000 Shutoff electromagnet Volt: 12 Overflow : 55.60...100.00 cm3/10s: (40.60...115.00) 1/min: 1850 quantity Shutoff 2nd speed electromagnet Volt: 12 Charge press. hPa: 1000 Del. quantity cm3/: 0.00...2.00 1000s.: -

	1
Delivery-quant. and breakaway char.:	Electr. shutoff:
Injqty.values,tempcompensated temperatura	1st speed
1st speed 1/min: 800 Charge-air pressure-setting point hPa: 300	Idle delivery:
Shutoff electromagnet Volt: 12	1st speed 1/min: 350 Shutoff
Del. quantity cm3/: 46.5047.50 1000s.: (43.8050.20)	electromagnet Volt: 12 Del. quantity_cm3/: 10.0014.00
3rd speed 1/min: 2200 Charge press. hPa: 1000 Shutoff	1000S.: (7.0017.00) Dispersion cm3/: 4.0 1000S.: (4.0)
electromagnet Volt: 12 Del. quantity cm3/: 0.0010.00 1000s.: (0.0010.00)	2nd speed 1/min: 500 Shutoff electromagnet Volt: 12
5th speed 1/min: 2000 - Charge press. hPa: 1000 - Shutoff	Del. quantity cm3/: 2.008.00 3rd speed 1/min: 600 Shutoff
electromagnet Volt: 12 Del. quantity cm3/: 44.5050.50 1000s.: (42.5052.50)	electromagnet Volt: 12 Del. quantity cm3/: 0.005.00 10008:: (0.005.00)
9th speed 1/min: 1850 - Charge press. hPa: 1000 - Shutoff	Automatic starting fuel delivery:
electromagnet Volt: 12 Del. quantity cm3/: 56.0060.00	1st speed 1/min: 150 Shutoff
1000S.: (54.8061.20)	electromagnet Volt: 12 Del. quantity cm3/: 82.00132.00 1000S.: (80.00134.00)
electromagnet Volt: 12 Del. quantity cm3/: 60.5063.50 1000S.: (62.0062.00)	2nd speed 1/min: 350 Shutoff
12th speed 1/min: 1400 - Charge press. hPa: 1000 - Shutoff	electromagnet Volt: 12 Del. quantity cm3/: 30.0070.00 1000S.: (30.0070.00)
electromagnet Volt: 12 - Del. quantity cm3/: 58.8059.80 - 1000s.: (56.5062.10)	4th speed 1/min: 100
15th speed 1/min: 800 - Charge press. hPa: 1000 - Shutoff	Shutoff electromagnet Volt: 12 Del. quantity cm3/: 80.00130.00 1000S.: (80.00130.00)
electromagnet Volt: 12	Shutoff electromagnet:
18th speed 1/min: 500 - Shutoff - electromagnet Volt: 12 -	Cut-in min voltage : 10,0 Rated voltage : 12,0
Del. quantity cm3/: 34.5035.50 1000s.: (31.8038.20) 20th speed 1/min: 800	Mounting and assembly dimensions:
Shutoff electromagnet Volt: 12 -	Designation Mm: 3,23,4
Del. quantity cm3/: 39.5043.50 - 1000s.: (41.5041.50)	KF mm: KOT MS mm: -
-	SVS max. mm: -

+ Mech. shutoff:

Remarks:

Note inst. in remarks column

: VWW 1,6 X15 Test scheet : 18.02.91 Edition : 11.05.89 replaces

Calibrating oil : ISO-4113

Injection pump : VE4/8F2400R348 Type number : 0 460 484 027

Customer Part-No. :

Customer-specific information

Customer : W

: 086-1.61 Engine

TEST BENCH REQUIREMENTS

Calibrating oil

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assemb. 🕜

Opening |

bar: 147.00...150.00 Pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840

Start of delivery Prestroke mm: -(from BDC): -

Injection pump setting values Test specifications in parentheses

Timing device travel

1/min: 1250

Setting value mm: 3.10...3.50

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1250 Speed

Setting value bar: 5.00...5.60

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250

Del. quantity cm3/

1000s.: 31.50...32.50

Shutoff

electromagnet Volt: 12 cm3/: 2.0 1000s.: (3.0) Dispersion

Low-idle speed regulation

1/min: 425 Speed

Del. quantity cm3/ 1000s.: 7.00...9.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 2.0 1000s.: (3.0)

Residual-Delivery Setting

Speed 1/min: 550

Del. quantity cm3/ 1000s.: 4.50...5.50

Shutoff

electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2650

Del. quantity cm3/

1000s.: 12.00...16.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100 Del. quantity cm3/: 35.0G...85.00 mind 1000S.: 35.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

Speed 1/min: 1250

Inj.-qty. cm3/

difference 1000s.: 5.00...11.00

Shutoff

electromagnet Volt: 12 TD-travel dif.measurement

correttore anticipo iniezione (SV)

1/min: 1250 1.Speed

TD-travel Shutoff mm: 0.60...0.80 difference electromagnet Volt: 12 : 55.60...138.90 Shutoff Overflow electromagnet Volt: 12 cm3/10s: (41.70...152.90) quantity SP press.-dif.measurement pompa di mandata (FP) Delivery-quant, and breakaway char.: 1.Speed 1/min: 1250 Supply pump 1/min: 2800 pressure 2nd speed bar: 0.90...1.30 difference Shutoff Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...6.00 1000s.: (0.00...6.00) 5th speed 1/min: 2650 electromagnet Volt: 12 Inspection pump test specifications Test specifications in parentheses Shutoff electromagnet Volt: 12 Del. quantity cm3/: 12.00...16.00 1000s.: (10.00...18.00) 8th speed 1/min: 2550 Timing-device characteristic: 1/min: 2250 2nd speed 8th speed TD travel mm: 7.30...8.10 Shutoff mm: (7.00...8.40) electromagnet Volt: 12 Del. quantity cm3/: 19.50...29.50 1000S.: (18.50...30.50) 9th speed 1/min: 2250 Shutoff electromagnet Volt: 12 1/min: 1250 mm: 3.10...3.50 mm: (2.60...4.00) 3rd speed TD travel Shutoff electromagnet Volt: 12 Del. quantity cm3/: 30.00...32.00 Shutoff electromagnet Volt: 12 1000s.: (28.80...33.20) 1/min: 750 1/min: 1250 4th speed 12th speed mm: 1.10...1.90 TD travel Shutoff electromagnet Volt: 12 Del. quyntity cm3/: 31.50...32.50 1000S.: (29.80...34.20) mm: (0.80...2.20) Shutoff electromagnet Volt: 12 1/min: 600 20th speed Supply-pump pressure characteristic: Shutoff electromagnet Volt: 12 De!. quantity cm3/: 22.50...25.50 1000s.: (21.00...27.00) 1/min: 600 1st speed Supply-pump bar: 3.40...4.00 pressure Shutoff Mech. shutoff: electromagnet Volt: 12 2nd speed 1/min: 1250 Electr. shutoff: Supply-pump bar: 5.00...5.60 pressure 1/min: 425 1st speed Shutoff Del. quantity cm3/: 0.00...3.00 electromagnet Volt: 12 1000s.: (0.00...3.00) 1/min: 2250 3rd speed Shutoff Supply-pump electromagnet volt: bar: 7.30...7.90 pressure Shutoff Damper set qty.: electromagnet Volt: 12 LFG-setting: solidale con carcassa: Overlow quantity at overflow valve: Idle delivery: 1/min: 600 1st speed Shutoff 1st speed 1/min: 425 electromagnet Volt: 12 Overflow: 41.70...83.40 Shutoff electromagnet Volt: 12 quantity cm3/10s: (27.80...97.30) Del. quantity cm3/: 7.00...9.00 1/min: 2250 1000s.: (4.00...12.00) 2nd speed

1/min: 400 2nd speed Automatic starting fuel delivery: Shutoff electromagnet Volt: 12 1st speed 1/min: 180 Del. quantity cm3/: 8.50...11.50 Shutoff 1000s.: (6.00...14.00) electromagnet Volt: 12 Del. quantity cm3/: 35.00...85.00 1000s.: (35.00...85.00) High Idle: 1st speed 1/mi: 525 2nd speed 1/min: 380 Shutoff Shutoff electromagnet Volt: 12 Del. quantity cm3/: 7.00...9.00 1000s.: (4.00...12.00) electromagnet Volt: 12 Del. quantity cm3/: 15.00...35.00 1000s.: (15.00...35.00) Residual: 4th speed 1/min: 100 Shutoff 1/min: 550 1.Rotacao electromagnet Volt: 12 Del. quantity cm3/: 35.00...85.00 1000s.: (35.00...85.00) Shutoff electromagnet Volt: 12 Del. quantity cm3/: 4.50...5.50 1000s.: (3.00...7.00) 1/min: 500 Shutoff electromagnet: 2nd speed Shutoff Cut-in electromagnet Volt: 12 min voltage : 10.0 Del. quantity cm3/: 4.10...6.10 Rated voltage : 12.0 1000s.: (2.60...7.60) Mounting and assembly dimensions: Load-dependent start of delivery: Ini.-qty.dif.measurement: Designation mm: 3,2...3,4 mm: 5,3...5.7 K KF 3rd speed 1/min: 1250 Inj.—qty. cm3/: 5.00...11.00 MS mm: 1,4...1.6 difference 1000s.: (4.00...12.00) Shutoff Remarks: electromagnet Volt: 12 5th speed 1/min: 1250 Inj.-qty. cm3/: 2.00...8.00 difference 1000s.: -Shutoff electromagnet Volt: 12 TD-travel dif.measurement: correttore anticipo iniezione (SV): difference mm: -Shutoff electromagnet Volt: 12 3rd speed 1/min: 1250 TD-travel : 1.30...1.70 difference mm: (1.00...2.00) Shutoff electromagnet Volt: 12 1/min: 1250 3rd speed Supply pumppressure : 0.90...1.30 difference bar: (0.70...1.50) Shutoff electromagnet Volt: 12

Note inst. in remarks column

: VWW 1,9 C Test scheet : 18.02.91 Edition

replaces

Calibrating oil : ISO-4113

Injection pump : VE4/8F2200R355 : 0 460 484 029 Type number

Customer Part-No. :

Customer-specific information

Customer

Engine

: 086-1.9L.

TEST BENCH REQUIREMENTS

Calibrating oil return temp.

with thermometer : 40.09...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating mozzle-holder

assembly

: 1 688 901 000

Opening

bar: 147.00...150.00 Pressure

Test ini. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840

Start of delivery Prestroke mm: -(from BDC): -

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1250 Speed

Setting value mm: 3.16...3.50

Shutoff

electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250

L23

Setting value bar: 5.50...6.10

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1250 Speed

Del. quantity cm3/ 1000s.: 35.50...36.50

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 2.0 1000s.: (3.0)

Low-idle speed regulation

1/min: 450 Speed

Del. quantity cm3/

1000s.: 7.00...9.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 2.0 1000s.: (3.0)

Residual-Delivery Setting

1/min: 575 Speed

Del. quantity cm3/ 1000s.: 2.00...3.00

Shutoff

electromagnet Volt: 12

Full-load speed regulation

1/min: 2525

Del. quantity cm3/

1000s.: 10.00...14.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100

Del. quantity cm3/: 35.00...85.00 mind 1000s.: 35.00

mind

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

1/min: 1250 Speed Charge press hPa: 12

cm3/ Inj.-qty.

difference 1000S.: 5.00...11.00

electromagnet Volt: 12 TD-travel dif.measurement

correttore anticipo iniezione (SV)

1. Speed 1/min: 1250

TD-travel Shutoff electromagnet Volt: 12 Overflow : 55.60...138.90 mm: 0.30...0.50 difference Shutoff electromagnet Volt: 12 cm3/10s: (41.70...152.90) quantity SP press.-dif.measurement pompa di mandata (FP) Delivery-quant. and breakaway char.: 1. Speed 1/min: 1250 Supply pump pressure 1/min: 2700 2nd speed difference bar: 0.30...1.10 Shutoff Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses Shutoff electromagnet Volt: 12 Del. quantity cm3/: 10.00...14.00 Timing device characteristic: 1000s.: (8.00...16.00) 1/min: 2200 2nd speed 8th speed 1/min: 2425 mm: 7.10...7.90 TD travel Shutoff electromagnet Volt: 12
Del. quantity cm3/: 18.00...28.00
10005.: (17.00...29.00) mm: (6.80...8.20) Shutoff electromagnet Volt: 12
3rd speed 1/min: 1250
TD travel mm: 3.10...3.50 9th speed 1/min: 2200 Shutoff mm: (2.60...4.00) electromagnet Volt: 12 Shutoff Del. quantity cm3/: 31.00...33.00 1000s : (29.80...34.20) electromagnet Volt: 12 1/min: 750 4th speed 12th speed 1/min: 1250 mm: 1.10...1.90 TD travel Shutoff mm: (0.80...2.20) Shutoff electromagnet Volt: 12 Supply-pump pressure characteristic: Shutoff electromagnet volt: 12 Del. quantity cm3/: 30.00...33.00 1st speed 1/min: 750 Supply-pump 1000H.: (28.50...34.50) pressure bar: 4.30...4.90 1/min: 500 20th speed Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 Del. quantity cm3/: 27.50...32.50 1000s.: (25.00...35.00) 1/min: 1250 2nd speed Supply-pump bar: 5.50...6.10 pressure Shutoff Mech. shutoff: electromagnet Volt: 12 3rd speed 1/min: 2200 Electr. shutoff: Supply-pump bar: 7.70...8.30 pressure 1st speed 1/min: 450 Shutoff Del. quantity cm3/: 0.00...3.00 electromagnet Volt: 12 1000s.: (0.00...3.00) Overlow quantity at overflow valve: Idle delivery: 1st speed 1/min: 500 Shutoff Damper set qty.: electromagnet Volt: 12 : 41.70...83.40 Overflow 2nd speed 1/min: 1000 cm3/10s: (27.80...97.30) quantity Shutoff 2nd speed 1/min: 2200 electromagnet Volt: 12

MO1

Del. quantity cm3/: 11.00...13.00 1/min: 1250 3rd speed 1000s.: (8.00...16.00) Supply pump-: 0.50...0.90 pressure LFG-setting: difference bar: (0.30...1.10) solidate con carcassa: Idle delivery: Shutoff electromagnet Volt: 12 1st speed 1/min: 450 Automatic starting fuel delivery: Shutoff electromagnet Volt: 12 ist speed 1/min: 180 Del. quantity cm3/: 7.00...9.00 1000S.: (4.00...12.00) Shutoff electromagnet Volt: 12 Del. quantity cm3/: 35.00...85.00 1000s.: (35.00...85.00) High Idle: 1/mi: 525 1st speed 1/min: 380 2nd speed Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 Del. quantity cm3/: 18.00...38.00 Del. quantity cm3/: 7.00...9.00 1000s.: (4.00...12.00) 1000s.: (18.00...38.00) Residual: 1/min: 100 4th speed Shutoff 1.Rotacao 1/min: 575 electromagnet Volt: 12 Shutoff Del. quantity cm3/: 35.00...85.00 electromagnet Volt: 12 Del. quantity cm3/: 2.00...3.00 1000s.: (35.00...85.00) 1000s.: (0.50...4.50) Shutoff electromagnet: 1/min: 525 2nd speed Shutoff Cut-in electromagnet Volt: 12 min voltage : 10.0 Del. quantity cm3/: 2.50...4.50 Rated voltage : 12.0 1000s.: (1.00...6.00) Mounting and assembly dimensions: Load-dependent start of delivery: Inj.-aty.dif.measurement: Designation mm: 3,2...3,4 mm: 5,1...5,3 mm: 1,1...1,3 mm: 17.0...19.0 1/min: 1250 cm3/: 5.00...11.00 3rd speed KF Inj.—qty. MS difference 1000s.: (4.00...12.00) XK Shutoff XL mm: 9,3...12,7 electromagnet Volt: 12 1/min: 1250 cm3/: 2.00...8.00 5th speed Remarks: Inj.—qty. • difference 1000s.: -Shutoff electromagnet Volt: 12 TD-travel dif.measurement: correttore anticipo iniezione (SV): 1st speed 1/min: 1250 : 0.30...0.50 TD-travel difference mm: -Shutoff electromagnet Volt: 12 3rd speed 1/min: 1250 TD-travel : 0.80...1.20 difference mm: (0.50...1.50) Shutoff electromagnet Volt: 12

Note inst. in remarks column

Test scheet : REN 2,0 P4 Edition : 18.02.91

replaces

Calibrating oil : ISO-4113

Injection pump : VE4/8F2300R317-3 Type number : 0 460 484 041

Customer Part-No.:

Customer-specific information

Customer : RNUR

: F8Q - 742 Engine

TEST BENCH REQUIREMENTS

Calibrating oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening |

bar: 130.00...133.00 Pressure

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 450 x Lenath

Start of delivery Prestroke mm: -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250

Setting value mm: 4.10...4.50

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1250 Speed

MD3

Setting value bar: 4.50...5.10

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250

Del. quantity cm3/

1000s.: 31.00...32.00

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 2.5

1000s.: (3.0)

Low-idle speed regulation

1/min: 410 Speed Del. quantity cm3/

1000s.: 6,5...10,5

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 2,5 1000s.: (3,0)

Residual-Delivery Setting

1/min: 500 Speed

Del. quantity cm3/

1000s.: 1.00...5.00

Shutoff

electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2450

Del. quantity cm3/ 1000s.: 22.00...28.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100

Del. quantity cm3/: 40.00...70.00

mind 1000s.: 40.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery: Inj.-qty.dif.measurement:

1/min: 1250 Speed cm3/

Inj.-aty.

difference 1000s.: 9.00...13.00

Shutoff

electromagnet Volt: 12

TD-travel dif.measurement

correttore anticipo iniezione (SV)

1/min: 1250 1.Speed

TD-travel 1/min: 1250 2nd speed mm: 0.30...0.50 difference Supply-pump Shutoff bar: 4.50...5.10 pressure electromagnet Volt: 12 Shutoff SP press.-dif.measurement electromagnet Volt: 12 3rd speed 1/min: 2250 pompa di mandata (FP) 1. Speed 1/min: 1250 Supply-pump Supply pump bar: 7.00...7.60 pressure pressure Shutoff difference bar: 0,10...0,30 electromagnet Volt: 12 Shutoff electromagnet Volt: 12 Overlow quantity at overflow valve: Inspection pump test specifications 1/min: 750 1st speed Test specifications in parentheses Shutoff electromagnet Volt: 12 Timing device characteristic: Overflow | : 41.70...83.40 cm3/10s: (26.70...98.40) 1/min: 2250 quantity 2nd speed 1/min: 2250 2nd speed TD travel mm: 7.80...8.60 Shutoff mm: (7.80...8.60) electromagnet Volt: 12 : 55.60...139.00 Shutoff Overflow . cm3/10s: (40.60...153.00) electromagnet Volt: 12 quantity 1/min: 1250 3rd speed mm: 4.10...4.50 mm: (3.60...5.00) TD travel Delivery-quant. and breakaway char.: Shutoff electromagnet Volt: 12 1/min: 2950 2nd speed 4th speed 1/min: 750 Shutoff mm: 1.90...2.70 mm: (1.60...3.00) electromagnet Vc.t: 12 TD travel Del. quantity cm3/: 0.00...5.00 1000s.: (0.00...5.00) Shutoff electromagnet Volt: 12 1/min: 2650 3rd speed 1/min: 2000 6th speed Shutoff mm: 7.20...8.00 TD travel mm: (6.90...8.30) Shutoff electromagnet Volt: 12 8th speed 1/min: 500 TD travel mm: 1,90...4,30 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 22.00...28.00 mm: -KSB/AFB 1000s.: (21.00...29.00) valve Volt: 12 1/min: 2250 9th speed Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 1/min: 310 Del. quantity cm3/: 31.50...33.50 9th speed 1000s.: (30.20...34.80) TD travel mm: 0.60...3.00 1/min: 2000 mm: -10th speed KSB/AFB Shutoff valve Volt: 12 Shutoff electromagnet Volt: 12 Supply-pump pressure characteristic: Shutoff electromagnet Volt: 12 Del. quantity cm3/: 29.70...32.70 1st speed 1/min: 750 Supply-pump 1000s.: (28.90...33.50) bar: 3.10...3.70 1/min: 1250 pressure 12th speed Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12

Del. quyntity cm3/: 31.00...32.00 cm3/: 2.00...8.00 Ini.-qty. 1000s.: (29.20...33.80) 1/min: 750 difference 1000s.: -20th speed Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 Del. quantity cm3/: 30.10...33.10 TD-travel dif.measurement: 1000s.: (29.30...33.90) correttore anticipo iniezione (SV): 1/min: 1250 1st speed : 0.30...0.50 Mech. shutoff: TD-travel difference mm: (0.30...0.50) Electr. shutoff: Shutoff electromagnet Volt: 12 3rd speed 1/min: 1250 1st speed 1/min: 410 Del. quantity cm3/: 0.00...3.00 : 0.10...0.50 TD-travel 1000s.: (0.00...3.00) difference mm: (0.00...0.60) Shutoff Shutoff electromagnet volt: electromagnet Volt: 12 Damper set qty.: SP press.—dif.measurement: pompa di mandata (FP): LFG-setting: 1st speed 1/min: 1250 solidale con carcassa: Supply pump-Idle delivery: : 0.10...0.30 pressure difference bar: (0.10...0.30) 1st speed 1/min: 410 Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 3rd speed 1/min: 1250 Del. quantity cm3/: 6.50...10.50 Supply pump-1000s.: (4.50...12.50) : 0.20...0.60 pressure difference bar: (0.20...0.60) High Idle: Shutoff electromagnet Volt: 12 1st speed 1/mi: 500 Shutoff Automatic starting fuel delivery: electromagnet Volt: 12 Del. quantity cm3/: 7.00...11.00 1000S.: (5.00...13.00) 1st speed 1/min: 210 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 45.00...75.00 Residual: 1000s.: (45.00...75.00) 1.Rotacao 1/min: 500 Shutoff 1/min: 310 2nd speed electromagnet Volt: 12 Shutoff Del. quantity cm3/: 1.00...5.00 electromagnet Volt: 12 Del. quantity cm3/: 15.00...45.00 1000s.: (15.00...45.00) 1000s.: (1.00...5.00) Load-dependent start of delivery: Inj.-qty.dif.measurement: 4th speed 1/min: 100 Shutoff 1st speed 1/min: 1250 electromagnet Volt: 12 Inj.-qty. cm3/ : 7.70...9.70 Del. quantity cm3/: 40.00...70.00 1000s.: (40.00...70.00) difference 1000s.: -Shutoff electromagnet Volt: 12 Shutoff electromagnet: 3rd speed 1/min: 1250 Inj.—qty. cm3/: 9 difference 1000s.: cm3/: 9.00...13.00 Cut-in : 10.0 min voltage Shutoff Rated voltage electromagnet Volt: 12 5th speed 1/min: 1250 Mounting and assembly dimensions:

M05

Designation K KF MS SVS max. mm: 3,2...3,4 mm: 5,3...5,7 mm: 1,1...1,5 mm: 2,7

Remarks:

Note inst. in remarks column

Test scheet : VWW 2,4 S7 : 18.02.91 Edition : 19.07.89 replaces Calibrating oil : ISO-4113

Injection pump : VE5/8F2100L358 Type number : 0 460 485 003

Customer Part-No. :

Customer-specific information

Customer

Enaine : 153-2.4L.-T4

TEST BENCH REQUIREMENTS

Calibrating oil return temp.

with thermometer : 40.00...48.00 : 42.00...50.00 Electronically

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assembly

Openina

bar: 147.00...150.00 Pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery Prestroke (from BDC): -

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1250 Speed

Setting value mm: 2.80...3.20

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1250 Speed

MO7

Setting value bar: 5.70...6.30

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1250

Del. quantity cm3/

1000s.: 35.50...36.50

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 2.0

Low-idle speed regulation

Speed 1/min: 415

Del. quantity cm3/ 1000s.: 7.00...9.00

Shutoff

electromagnet Volt: 12

Residual-Delivery Setting

1/min: 540 Speed

Del. quantity cm3/

1000s.: 7.50...8.50

Shutoff

electromagnet Volt: 12

Full-load speed regulation

1/min: 2400 Speed

Del. quantity cm3/

1000s.: 10.00...14.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 35.00...85.00 mind 1000s.: 35.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

Speed 1/min: 1500

cm3/Inj.-qty.

difference 1000S.: 7.00...13.00

Shutoff

electromagnet Volt: 12

TD-travel dif.measurement

correttore anticipo iniezione (SV)

1/min: 1500 1. Speed

TD-travel

difference mm: 0.30...0.50

Shutoff

electromagnet Volt: 12

SP press.-dif.measurement : 55.60...138.90 Overflow pompa di mandata (FP) cm3/10s: (41.70...152.90) quantity 1/min: 1250 1.Speed Supply pump Delivery-quant. and breakaway char.: pressure difference bar: 0,60...1,00 Shirtoff 1/min: 2600 3rd speed electromagnet Volt: 12 Shutoff Inspection-pump test specifications Test specifications in parentheses Timing device characteristic: Shutoff electromagnet Volt: 12 1st speed 1/min: 2100 Del. quantity cm3/: 10.00...14.00 mm: 5,30...6.00 mm: (5,00...6.40) 1000s.: (8.00...16.00) 1/min: 2300 TD travel 8th speed electromagnet Volt: 12 Shutoff 1/min: 1700 2nd speed electromagnet Volt: 12 mm: 5,20...6,00 Del. quantity cm3/: 17.00...27.00 TD travel 1000s.: (16.00...28.00) 1/min: 2100 mm: (4,90...6,30) Shutoff 9th speed electromagnet Volt: 12 Shutoff 1/min: 1250 electromagnet Volt: 12 Del. quantity cm3/: 30.00...32.00 1000S.: (28.80...33.20) 3rd speed mm: 2,80...3,20 mm: (2,30...3,70) TD travel Shutoff 12th speed 1/min: 1250 electromagnet Volt: 12 4th speed 1/min: 750 Shutoff electromagnet Volt: 12 Del. quyntity cm3/: 35,50...36,50 1000S.: (33.80...38.20) mm: 0,30...1,10 TD travel mm: (0.00...1.40)20th speed 1/min: 500 Supply-pump pressure characteristic: Shutoff electromagnet Volt: 12 Del. quantity cm3/: 31.50...34.50 1000s.: (30.00...36.00) 1/min: 600 1st speed Supply-pump pressure bar: 3.80...4.40 Shutoff Mech. shutoff: electromagnet Volt: 12 1/min: 1250 2nd speed Electr. shutoff: Supply-pump pressure bar: 5.70...6.30 1/min: 415 1st speed Shutoff Del. quantity cm3/: 0.00...3.00 electromagnet Volt: 12 3rd speed 1/min: 2100 1000s.: (0.00...3.00) Supply-pump Damper set qty.: pressure bar: 8.10...8.70 Shutoff LFG-settina: electromagnet Volt: 12 solidale con carcassa: Idle delivery: Overlow quantity at overflow valve: 1/min: 415 1st speed 1st speed 1/min: 600 Shutoff Shutoff electromagnet Volt: 12 Del. quantity cm3/: 7.00...9.00 electromagnet Volt: 12 : 41.70...83.40 Overflow 1000s.: (4.00...12.00) cm3/10s: (27.80...97.30) 1/min: 2100 quantity 2nd speed Residual: Shutoff electromagnet Volt: 12 1.Rotacao 1/min: 540

Shutoff electromagnet Volt: 12 Del. quantity cm3/: 2.00...3.00 1000s.: (0,50...4,50) 2nd speea 1/min: 490 Shutoff Cut-in electromagnet Volt: 12 Del. quantity cm3/: 2.30...4.30 1000s.: (0.80...5.80) Load-dependent start of delivery: Inj.-qty.dif.measurement: Designation K 3rd speed 1/min: 1500 KF cm3/: 7.00...13.00 Inj.—qty. MS difference 1000S.: (6.00...14.00) SVS max. Shutoff electromagnet Volt: 12 5th speed 1/min: 1500 Inj.-qty. cm3/: 2.00...8.00 difference 1000S:: (2.00...8.00) Remarks: Shutoff electromagnet Volt: 12 TD-travel dif.measurement: correttore anticipo iniezione (SV): 1st speed 1/min: 1500 TD-travel : 0.30...0.50 difference mm: (0.30...0.50) Shutoff electromagnet Volt: 12 3rd speed 1/min: 1500 TD-travel : 1.00...1.40 difference mm: (0.60...1.80) Shutoff electromagnet Volt: 12 1/min: 1500 3rd speed Supply pump-: 0.80...1.20 pressure difference bar: (0.60...1.40) Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 180 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 35.00...85.00 1000s.: (35.00...85.00) 1/min: 380 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 17.00...37.00 1000s.: (17.00...37.00) 4th speed 1/min: 100 Shutoff electromagnet Volt: 12

Del. quantity cm3/: 35.00...85.00 1000s.: (35.00...85.00)

Shutoff electromagnet:

min voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

mm: 3.2...3.4 mm: K-OT mm: 1.2...1.6 mm: 2,4

M09

Note inst. in remarks column

Test scheet : FOR 1.8 D : 18.02.91 Edition

replaces

Calibrating oil : ISO-4113

Injection pump : VE4/9F2400R299-1 : 0 460 494 257 Type number

Customer Part-No. :

Customer-specific information

Customer : FORD

Engine : 1,8L IDI Swiss E

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically: 42.00...50.0

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

assembly : 1 688 901 022

Openina

bar: 130.00...133.00 Pressure

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 450 x Length

Start of delivery Prestroke mm: -(from BDC): -

Start of delivery block Piston stroke mm: 0,8

mm: +-0.02(0.06)

Outlet.

Injection pump setting values Test specifications in parentheses

Timing device travel

1/min: 1500

Setting value mm: 4.90...5.30

AFB/AFB

Volt: 12 valve

Shutoff

electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500

Setting value bar: 6.30...6.90

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1750 Speed

Del. quantity cm3/

1000s.: 27.10...27.50

KSB/AFB

Volt: 12 valve

Shutoff

electromagnet Volt: 12 cm3/: 2.0 Dispersion 1000s.: (3.0)

Low-idle speed regulation

1/min: 425 Speed

Del. quantity cm3/

1000s.: 10,0...14.00

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 2,5 1000s.: (4,0)

Residual-Delivery Setting

Speed 1/min: 530

Del. quantity cm3/

1000s.: 1.00...5.00

KSB/AFB

Volt: 12 valve

Shutoff

electromagnet Volt: 12

Full-load speed regulation

1/min: 2675 Speed

Del. quantity cm3/ 1000s.: 8.00...14.00

KSB/AFB

Volt: 12 valve Shutoff electromagnet Volt: 12

Start:

Speed 1/min:		+	KSB/AFB	
Del. quantity cm3/:	53.0073.00	+	valve Volt	: 12
mind 1000s.:	53.00	+	Shutoff	40
KSB/AFB	43	+	electromagnet Volt	: 12
Valve Volt:	12	†	8th speed 1/min	
Shutoff	10	†	TD travel mm	: 2.805,20 B
electromagnet Volt:	12	I	KSB/AFB valve Volt	
Load-dependent star	t of delivery:	I	Shutoff	
Inj.—qty.dif.measur		1	electromagnet Volt	12
		1	9th speed 1/min	
Speed 1/min:	1200	+		3.403.60 A
Inj.—qty. cm3/		+	mm	(2.704.30) A
difference 1000s.:	3.5011.50	+	KSB/AFB	
KSB/AFB	42	+	valve Volt	-
valve Volt:	12	+	Shutoff	42
Shutoff	12	+	electromagnet Volt	12
electromagnet Volt: TD-travel dif.measu	12 noment	T	Cumply-nump process	a characteristic.
correttore anticipo		I	Supply-pump pressu	e characteristic:
1. Speed 1/min:		I	1st speed 1/min	750
TD-travel	. 233	1	Supply-pump	1 1 20
	0.500.70	+	pressure bar	4.204.80
KSB/AFB		+	KSB/AFB	
valve Volt:	12	+	valve Volt	: 12
Shutoff		+	Shutoff	
electromagnet Volt:	12	+	electromagnet Volt	
SP press. dif.measu		+	2nd speed 1/min	: 1500
pompa di mandata (Fi 1. Speed 1/min:		+	Supply-pump	
Supply pump	1200	+++++++++	pressure bar KSB/AFB	6.306.90
pressure		I	valve Volt	12
	0,100,30	1	Shutoff	. 12
KSB/AFB	-, ,	+ \	electromagnet Volt	12
valve Volt:	12	+	3rd speed 1/min	
Shutoff		+	Supply-pump	
electromagnet Volt:	12	+		7.508.10
-	. 9 4* 9	+	KSB/AFB	4.0
Inspection pump tes	t specifications	+	valve Volt	12
Test specifications	in parentheses	†	Shutoff	. 12
Timing-device chara	ctonictic	T	electromagnet Volt	12
THINING GEVICE CHAIR	cter istre.	I	Overlow quantity as	overflow valve.
2nd speed 1/min:	2000	1	over tow quarterty a	. Over I tow valve.
	7.708.50	+	1st speed 1/min	750
mm:	(7.408.80)	+	KSB/AFB	
KSB/AFB		+	valve Volt	12
valve Volt:	12	+	Shutoff	
Shutoff	43	+	electromagnet Volt	12
electromagnet Volt:		+		41.7083.40
3rd speed 1/min: TD travel mm:		†	quantity cm3/10s	(26.7098.40)
	4.905.30 (4.605.60)	T	2nd speed 1/min KSB/AFB	2400
KSB/AFB	(4.005.00)	I	valve Volt	12
valve Volt:	12	1	Shutoff	16
Shutoff		+	electromagnet Volt	12
electromagnet Volt:	12	+		55.60139.00
4th speed 1/min:	800	+	quantity cm3/10s	
	0.801.60	+		
mm:	(0.501.90)	+	Delivery-quant. and	l breakaway char.:

			+	Shutoff		
-		0050	+	electromagne	et volt:	-
3rd speed KSB/AFB	1/min:	2950	‡	Damper set o	aty.:	
valve Shutoff	Volt:	12	<u>†</u>	LFG-setting:		
electromagne	t Volt:	12	+	solidale cor		sa:
Del. quantit	y cm3/:	0.002.00	+	Idle deliver		
		(0.002.00)	+			
5th speed KSB/AFB	1/min:		‡	1st speed KSB/AFB	1/min:	425
valve Shutoff	Volt:	12	‡	valve Shutoff	Volt:	12
electromagne	t Volt:	12	+	electromagne	et Volt:	12
Del. quantit	y cm3/:	8.0014.00	+		ty cm3/:	10.0014.00
	1000S.:	(6.5015.50)	+	•	1000s.:	(6.4017.60)
8th speed KSB/AFB	1/min:	2550	‡	High Idle:		
valve	Volt:	12	+	J		
Shutoff			+	1st speed	1/mi:	590
electromagne			+	KSB/AFB		
		18.0026.00	+	valve	Volt:	12
		(16.0028.00)	†	Shutoff		4.3
9th speed	1/min:	2400	†	electromagne	et Volt:	7.00 44.00
KSB/AFB valve	Volt:	12	Ť	vet. quantit	1000s	7.0011.00 (3.4014.60)
Shutoff	voct.	12	I		10005.:	(3.4014.00)
	t Volt:	12	I	Residual:		
Del. quantit	y cm3/:	12 25.5027.50	+			
•	1000s.:	(24.5028.50)	+	1.Rotacao	1/min:	530
11th speed	1/min:	1000	+	KSB/AFB		
KSB/AFB		40	+	valve	Volt:	12
valve	Volt:	12	+	Shutoff		4.2
Shutoff	+ Val++	12	1	electromagne	et voit:	100 500
electromagne		24.7027.70	Ť	bet. quantit	1000s	1.005.00 (0.205.80)
		(23.9028.50)	I		10003	(0.20).00)
12th speed			I	Load-depende	ent star	t of delivery:
KSB/AFB	,,,,,,,,,	55	1	Injaty.dif		
	Volt:	12	+			
Shutoff			+	1st speed	1/min:	1200
electromagne	t Volt:	12	+	Inj. qty. cr	3/:	5.007.00
Del. quyntit	y cm3/:	27.1027.50	†		1000s.:	(5.007.00)
	1/min:	(25.6029,00)	†	KSB/AFB	11-14-	10
20th speed KSB/AFB	(/#/1/1;	750	Ť	valve Shutoff	Volt:	12
valve	Volt:	12	I	electromagne	+ Vol+	12
Shutoff	***************************************	12	I	3rd speed		
electromagne	t Volt:	12	1	Iniaty.	cm3/:	3.5011.50
		25.2028.20	+	difference	1000s.:	(3.5011.50)
		(24.4029.00)	+	KSB/AFB		
	_		+	valve	Volt:	12
Mech. shutof	f:		+	Shutoff		•
Flasha about	c.c		†	electromagne	t Volt:	12
Electr. shute	ott:		†	5th speed	1/min:	2 00 9 00
1st speed	1/min.	7.25	Ť			2.008.00 (2.008.00)
Del. quantity			I	KSB/AFB	10003.	(2.000.00)
		(0.003.00)	I	valve	Volt:	12
		.5.55.7.15.66/	1		1000	
			1			

Shutoff electromagnet Volt: 12 TD-travel dif.measurement: correttore anticipo iniezione (SV): 1st speed 1/min: 1200 TD-travel : 0.50...0.70 mm: (0.50...0.70) difference KSB/AFB Volt: 12 valve Shutoff electromagnet Volt: 12 3rd speed 1/min: 1200 : 0.50...1.30 TD-travel difference mm: (0.50...1.30) KSB/AFB Volt: 12 valve Shutoff electromagnet Volt: 12 SP press.-dif.measurement: pompa di mandata (FP): 1/min: 1200 1st speed Supply pump-: 0.10...0.30 pressure difference bar: (0.10...0.30) KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Part-load del.at 3rd inj.-qty. terza fermo della portata stop (EGR set) scarico) (ARF) gaz d'échappement-ARF) 1/min: 1200 1st speed KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 11.30...12.30 1000s.: (9.30...14.30) Automatic starting fuel delivery: 1st speed 1/min: 275 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 60.00...90.00 1000s.: (60.00...90.00) 1/min: 500 2nd speed KSB/AFB Volt: 12 valve Shutoff

Del. quantity cm3/: 28.00...40.00 1000s.: (28.00...40.00) 1/min: 100 4th speed KSB/AFB Volt: 12 valve Shutoff electromagnet Volt: 12 Del. quantity cm3/: 53.00...73.00 1000s.: (51.00...75.00) Shutoff electromagnet: Cut-in : 10,0 min voltage Rated voltage : 12,0 Mounting and assembly dimensions: Designation mm: 3,2...3,4 mm: 5,3...5,7 mm: 1,5...1,9 KF MS Remarks:

electromagnet Volt: 12

Note inst. in remarks column

Test scheet : VWW 1,6 X17 Edition : 18.02.91

replaces

Calibrating oil : ISO-4113

Injection pump : VE4/9F2250R328-5 Type number : 0 460 494 267

Customer Fart-No. :

Customer-specific information

Customer : VW

Engine : 086T-1.6 LLK

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening

bar: 147.00...150.00 Pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery Prestroke mm: -(from BDC): -

Injection pump setting values Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250 Charge press. hPa: 750

Setting value mm: 3.00...3.40

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1250 Speed Charge press hPa: 750

Setting value bar: 4.90...5.50

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1500 Speed Charge press. hPa: 750

Del. quantity cm3/

1000s.: 42.00...43.00

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 2.5 1000s.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 700

Del. quantity cm3/

1000s.: 26.50...27.50

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

1/min: 465 Speed

Del. quantity cm3/

1000s.: 12,00...14.00

Shutoff

electromagnet Volt: 12.0 Del. quantity cm3/: 2,5 1000s.: (3,0)

Residual-Delivery Setting

Speed 1/min: 615

Del. quantity cm3/ 1000s.: 4.00...5.00

Shutoff

electromagnet Volt: 12

Full-load speed regulation

1/min: 2525 Charge press hPa: 750

Del. quantity cm3/ 1000s.: 13.00...17.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100 Del. quantity cm3/: 35.00...85.00 mind 1000s.: 35.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:	Charge press. hPa:	750
<pre>Injqty.dif.measurement:</pre>	Supply-pump	
+		3.303.90
Speed 1/min: 1250	Shutoff	
Charge press hPa: -	electromagnet Volt:	12
Inj.—qty. cm3/	2nd speed 1/min:	
difference 1000s.: 9.0013.00	Charge press. hPa:	750
Shutoff	Supply-pump	
electromagnet Volt: 12		4.905.50
TD-travel dif.measurement	Shutoff	42
correttore anticipo iniezione (SV)	electromagnet Volt:	12
1. Speed 1/min: 1250	3rd speed 1/min:	
Charge press hPa: -	Charge press. hPa:	750
difference mm: 0,600.80	Supply-pump	7.708.30
Shutoff	pressure bar: Shutoff	1.106.30
electromagnet Volt: 12	electromagnet Volt:	12
SP pressdif.measurement	etectionagnet vott.	12
pompa di mandata (FP)	Overlow quantity at	overflow valve.
1. Speed 1/min: 1250	over tow quarterty at	Over I COW Vacve.
Charge press hPa: -	1st speed 1/min:	700
Supply pump	Charge press. hPa:	
pressure	Shutoff	
difference bar: 0,100,30	electromagnet Volt:	12
Shutoff	Overflow :	41.7083.40
electromagnet Volt: 12	quantity cm3/10s:	(27.8097.30)
	2nd speed 1/min:	2250
Inspection-pump test specifications	Charge press. hPa:	750
Test specifications in parentheses	Shutoff'	
+	electromagnet Volt:	12
Timing-device characteristic:	Overflow :	
+	quantity cm3/10s:	(41.70153.90)
2nd speed 1/min: 2000 +		
Charge press hPa: 750	Delivery-quant. and	breakaway char.:
TD travel mm: 6.407.20		
mm: (6.107.50)		000
Shutoff 13	1nd speed 1/min:	
electromagnet Volt: 12	Charge air pressure	
3rd speed 1/min: 1250	point hPa:	
Charge press hPa: 750 † TD travel mm: 3.003.40		5.5
mm: (2.503.40)	Shutoff	13
Shutoff	electromagnet Volt: Del. quantity cm3/:	
electromagnet Volt: 12	1000s	(30.5036.50)
4th speed 1/min: 1000	2nd speed 1/min:	
Charge press hPa: 750	Charge press. hPa:	
TD travel mm: 1.702.50	Shutoff	100
mm: (1.402.80)	electromagnet Volt:	12
Shutoff	Del. quantity cm3/:	0.00 . 6.00
electromagnet Volt: 12	1000s.:	(0.006.00)
5th speed 1/min: 2250	5th speed 1/min:	2525
Charge press. hPa: 750	Charge press. hPa:	
TD travel mm: 7.007.80	Shutoff	
mm: (6.708.10)	electromagnet Volt:	12
Shutoff	Del. quantity cm3/:	
electromagnet Volt: 12	1000s.:	(11.0019.00)
<u> </u>	8th speed 1/min:	2425
Supply-pump pressure characteristic:		
	Charge press. hPa:	750
1st speed 1/min: 700		

Del. quantity cm3/: 26.5036.50 1000s.: (25.5037.50 9th speed 1/min: 2250 Charge press. hPa: 750 Shutoff		Shutoff electromagnet Volt: 12 Del. quantity cm3/: 12.0014.00 1000s.: (7.5018.50)
electromagnet Volt: 12 Del. quantity cm3/: 36.3038.30 1000s.: (35.1039.50 10th speed 1/min: 1500)	High Idle: 1st speed 1/mi: 515 Shutoff
Charge press. hPa: 750 Shutoff electromagnet Volt: 12 11th speed 1/min: 900	+	electromagnet Volt: 12 Del. quantity cm3/: 12.0014.00 1000s.: (8.0018.00)
Charge press. hPa: 300 Shutoff	-	Residual:
electromagnet Volt: 12 Del. quantity cm3/: 33.0034.00 1000s.: (30.5036,50		1.Rotacao 1/min: 615 Shutoff electromagnet Volt: 12
12th speed 1/min: 1500 Charge press. hPa: 750 Shutoff	<u> </u>	Del. quantity cm3/: 4.005.00 1000s.: (1.507.50) 2nd speed 1/min: 565
electromagnet Volt: 12 Del. quyntity cm3/: 42.0043.00	Ţ	Shutoff electromagnet Volt: 12
1000s.: (40,3044,70 13th speed 1/min: 500 Charge press. hPa: -) 	Del. quantity cm3/: 6.008.00 1000S.: (3.5010.50)
Shutoff electromagnet Volt: 12 Del. quantity cm3/: 26,0031,00	+	Load-dependent start of delivery: Injqty.dif.measurement:
1000s.: (23,5033,50 14th speed 1/min: 400 Charge press. hPa: - Shutoff		1st speed 1/min: 1250 Charge press. hPa: - Inj. qty. cm3/ : 7.009.00 difference 1000s.: (8.008.00)
electromagnet Volt: 12 Del. quantity cm3/: 29,5035,5 1000S.: (27.0038.00)	Shutoff electromagnet Volt: 12 3rd speed 1/min: 1250
15th speed 1/min: 700 Charge press. hPa: - Shutoff	+	Charge press. hPa: - Injqty. cm3/: 9.0013.00 difference 1000S.: (7.0015.00)
electromagnet Volt: 12 Del. quantity cm3/: 26.5027.50 1000s.: (24.0030.00) ‡	Shutoff electromagnet Volt: 12 5th speed 1/min: 1250
Mech. shutoff:	‡	Charge press. hPa: - Injqty. cm3/: 2.008.00 difference 1000S.: (2.008.00)
Electr. shutoff:	‡	Shutoff electromagnet Volt: 12
1st speed	+	2nd speed 1/min: 1250 Charge press. hPa: - TD-travel : 0.600.80
Shutoff electromagnet volt: -	+	difference mm: - Shutoff electromagnet Volt: 12
Damper set qty.:	I	4th speed 1/min: 1250 Charge press. hPa: -
LFG-setting: solidale con carcassa: Idle delivery:	+++++++++++++++++++++++++++++++++++++++	TD-travel : 0.901.30 difference mm: (0.601.60) Shutoff
1st speed 1/min: 465	<u>†</u>	electromagnet Volt: 12

M16

SP press.-dif.measurement: pompa di mandata (FP): 1st speed 1/min: 1250 Charge press, hPa: -Supply pump-: 0.10...0.30 pressure difference bar: (0.20...0.20) Shutoff electromagnet Volt: 12 4th speed 1/min: 1250 Charge press. hPa: -Supply pumppressure : 0.60...1.00 difference bar: (0.40...1.20) Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 200 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 35.00...85.00 1000S.: (35.00...85.00) 1/min: 100 4th speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 35.00...85.00 1000s.: (35.00...85.00) Shutoff electromagnet: Cut-in min voltage : 10.0 Rated voltage : 12.0 Mounting and assembly dimensions: Designation mm: K1 K KF mm: 5.6...6.0 mm: 1.2...1.6 MS mm: 3.1 SVS max. mm: 5.5 mm: 17.0...19.0 mm: 10.3...13.7 LDA stroke XK XL Remarks: :

Note remarks

Test sheet : MB 2,3 K : 12.04.91 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 074 892

Injection pump

Pump designation : PES4M55C32ORS167 EP type number : 0 410 054 960

Governor

Governor design. : RSF360/1900M70-7 Governer no. : 0 420 021 153

Customer-spec. information Customer : MB-NFZ

: 0M601-D23 A,S,CH Engine

1st version kW : 58.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 2.00...2.10 Prestroke mm : (1.95...2.15)

Rack travel in mm : 20.00...22.00

: 1-3-4-2 Firing order

Phasing : 0-90-180-270

Tolerance $+ - ^{\circ} : 0.00 (1.00)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 4.0...4.1

100 s: (3.9...4.2)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 335.0 Rack travel in mm : 5.1...5.3

Del.quantity cm3/: 0.5...0.6 100 s: (0.4...0.9)

cm3 : 0.1Spread

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 40.0...41.0 1000 : (39.0...42.0)

Spread cm3 : 2.50 1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7,0...7,5

Speed rpm : 2100

4th rack travel in: 2500

rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

rpm : 1000

Rack travel in mm: 1,4...1,5

LOW IDLE 1

Control lever

position degrees: 11...15

Setting point w/out bumper spring

M18

Speed rpm : 335 Rack travel in mm : 5.2	+ Speed rpm : 1900 - Del.quantity cm3/ : 39.541.5 + 1000 s: (38.542.5)
Testing: Speed rpm : 250	- Spread cm3 : 2.50 - 1000 s: (3.00)
Minimum rack trave: 7.50 Speed rpm : 335 Rack travel in mm : 5.105.30	Aneroid pressure h: 1100 Speed rpm : 500 Del.quantity cm3/: 34.536.0
Rack travel in mm: 2.50 Speed rpm: 550650 Speed rpm: 1000	1000 s: (33.537.0) s - Spread cm3 : 2.50 1000 s: (3.00)
Maximum rack trave: 1.50	Aneroid pressure h: 1100 Speed rpm: 800 Del.quantity cm3/: 37.539.0 ***
SET IDLE AUXILIARY SPRING Speed rpm : 400 Rack travel in mm : 3,94,1 : (3,84,2)	+ Del.quantity cm3/: 37.539.0 */ + 1000 s: (36.540.0)*/ - Spread cm3 : 2.50 + 1000 s: (3.00)
TORQUE CONTROL Torque control curve — 1st version	STARTING FUEL DELIVERY
1st speed rpm : 1000 Rack travel in m: 12.8012.90	<u>+</u>
2nd speed rpm : 1400 Rack travel in m: 12.2012.50 3rd speed rpm : 1900	Speed rpm : 100 - Del.quantity cm3/ : 52.00.0 1000 s: (52.00.0)
Rack travel in m: 11.4011.70 4th speed rpm : 500	Rack travel in mm : 20.100.00
Rack travel in m: 12.0012.30 * 5th speed rpm : 800 Rack travel in m: 12.4012.70**	HIGH IDLE
Aneroid/Altitude Compensator Test	1st version Aneroid pressure h: 1100 Speed rpm : 2100 Rack travel in mm : 7.007.50
4nt wassing	+ Del.quantity cm3/: 22.026.0 1000 s: (21.027.0)
1st version Setting Speed rpm : 1000	Spread cm3 : 2.50 1000 s: (3.00)
Speed rpm : 1000 Pressure hPa : 950 Rack travel mm : 0.000.20	LOW IDLE
Measurement Speed 1/min: 1000	Speed
1st pressure hPa : 900 Rack travel in m: 0.500.70 2nd pressure hPa : 750	1000 s: (4.59.0) Spread cm3 : 1.00 1000 s: (1.50)
Rack travel in m: 1.802.20	SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)
FUEL DELIVERY CHARACTERISTICS	Control lever at idle stop
1st version Aneroid pressure h: 1100 Speed rpm : 1400 Del.quantity cm3/: 39.541.0	- Speed rpm : 360 - Rack travel in mm : (12,313,7) - Del.quantity cm3/ : - - 1000 s: (33,041,0) - Current A : 1,8
1000 s: (38.542.0) Spread cm3 : 2.50 1000 s: (3.0)	Control lever at full-load stop Speed rpm : 2500 Rack travel in mm : 0,01,0
Aneroid pressure h: 1100	Track crayed in min . U,U,U

Current

short-duration A: 3,0

Starting test

Speed rpm : 100 Del.quantity cm3/:-

Del.quantity cm3/: min. 1000 s: 52,0 / 1,8A

Remarks:

Pin projection = 16.60...16.70 mm

Sliding sleeve pre-travel = 6.25 mm

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 335 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 15.3°...15.7° (15.2...15.8°) angular displacement of cam following start of delivery of cylinder no. 1.

- * Setting point for negative torque control negative retainer behind sliding sleeve
- ** Reference measurement:
 Control-rod travel and delivery too
 large position spiral spring
 downwards
 Control-rod travel and delivery too
 small position spiral spring upwards

Note remarks

: MB 2,3 L : 12.04.91 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 074 893

Injection pump

Pump designation : PES4M55C32ORS167 EP type number : 0 410 054 960

Governor

Governor design. : RSF360/2000M70-6 Governer no. : 0 420 021 152

Customer-spec. information Customer : MB-NFZ

: 0M601-D23 A,S,CH Engine

1st version kW : 60.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 2.00...2.10 Prestroke mm

: (1.95...2.15) Rack travel in mm : 20.00...22.00

: 1-3-4-2 Firing order

Phasina : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 4.0...4.1

100 s: (3.9...4.2)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 335.0

Rack travel in mm: 5.1...5.3 Del.quantity cm3/: 0.5...0.c

100 s: (0.4...0.9)

cm3 : 0.1 Spread 100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1100

Del.quantity : 40.0...41.0

1000 : (39.0...42.0) : 2.50 cm3

Spread 1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0 3rd rack travel in: 7,0...7,5

Speed rpm : 2200

4th rack travel in: 2500

Speed : 0.00...1.00 rom

SET IDLE CONTROL LEVER

POSITION

: 1000 Speed rpm

Rack travel in mm : 1,4...1,5

LOW IDLE 1

Control lever

position degrees: 11...15

Setting point w/out bumper spring

M21

Speed rpm : 335 Rack travel in mm : 5.2	Speed rpm : 2000 Del.quantity cm3/: 39.541.5
Speed rpm: 550650 Speed rpm: 1000 Maximum rack trave: 1.50	1000 s: (38.542.5) Spread cm3 : 2.50 1000 s: (3.00) Aneroid pressure h: 1100 Speed rpm : 500 * Del.quantity cm3/: 34.536.0 1000 s: (33.537.0) Spread cm3 : 2.50 1000 s: (3.00) Aneroid pressure h: 1100 Speed rpm : 800**
SET IDLE AUXILIARY SPRING Speed rpm : 400 Rack travel in mm : 3,94,1 : (3,84,2)	Del.quantity cm3/: 37.539.0 * 1000 s: (36.540.0)* Spread cm3 : 2.50 1000 s: (3.00)
TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 12.8012.90	- STARTING FUEL DELIVERY
2nd speed rpm : 1400 - Rack travel in m: 12.2012.50 - 3rd speed rpm : 2000 - Rack travel in m: 11.4011.70 -	- Speed rpm : 100 Del.quantity cm3/ : 52.00.0 1000 s: (52.00.0) - Rack travel in mm : 20.100.00
4th speed rpm : 500 * - Rack travel in m: 12.0012.30 * - 5th speed rpm : 800** - Rack travel in m: 12.4012.70** -	HIGH IDLE 1st version
Aneroid/Altitude - Compensator Test -	- Aneroid pressure h: 1100 - Speed rpm : 2200 - Rack travel in mm : 7.007.50 - Del.quantity cm3/ : 22.026.0 - 1000 s: (21.027.0)
1st version Setting Speed rpm : 1000	- Spread cm3 : 2.50 - 1000 s: (3.00)
Pressure hPa : 950 Rack travel mm : 0.000.20	- LOW IDLE - Speed rpm : 335
Measurement Speed 1/min: 1000	- Rack travel in mm : 5.105.30 - Del.quantity cm3/: 5.06.0 - 1000 s: (4.59.0)
1st pressure hPa : 900 Rack travel in m: 0.500.70 2nd pressure hPa : 750	Spread cm3 1.00 1000 s. (1.50)
Rack travel in m: 1.802.20 FUEL DELIVERY CHARACTERISTICS	- SETTING/TESTING ELECTRONIC IDLE - REGULATION (ELR)
OCE DEFINED CHARACTERISTICS	- Control lever at idle stop - Speed rpm : 360
1st version Aneroid pressure h: 1100 Speed rpm : 1400 Del.quantity cm3/: 39.541.0 1000 s: (38.542.0)	Rack travel in mm : (12,313,7) Del.quantity cm3/: - 1000 s: (33,041,0) Current A : 1,8
Spread cm3 : 2.50 - 1000 s: (3.0) - Aneroid pressure h: 1100 -	- Control lever at full-load stop - Speed rpm : 2500 - Rack travel in mm : 0,01,0

Current

short-duration A: 3,0

Starting test

Speed rpm : 100
Del.quantity cm3/: min. 1000 s: 52,0 / 1,8A

Remarks:

Pin projection = 16.60...16.70 mm

Sliding sleeve pre-travel = 6.25 mm

TESTING PNEUMATIC SHUTOFF DEVICE -Control lever at idle stop. With n = 335 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 15.3°...15.7° (15.2...15.8°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

* Setting point for negative torque control - negative retainer behind sliding sleeve

** Reference measurement: Control-rod travel and delivery too large - position spiral spring downwards Control-rod travel and delivery too small - position spiral spring upwards

Note remarks

Test sheet : MB 2,3 M Edition : 12.04.91

Replaces

Test oil : ISO-4113

Combination no. : 0 400 074 894

Injection pump

Pump designation : PES4M55C32ORS167 EP type number : 0 410 054 960

Governor

Governor design. : RSF375/1900M69-6 : 0 420 021 150 Governer no.

Customer-spec. information Customer : MB-NFZ

Engine : OM601-D23 A,S,CH

1st version kW : 58.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 2.00...2.10 Prestroke mm : (1.95...2.15)

Rack travel in mm : 20.00...22.00

: 1-3-4-2 Firing order

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 4.0...4.1

100 s: (3.9...4.2)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 375.0 Rack travel in mm : 5.0...5.2 Del.quantity cm3/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000Aneroid pressure h: 1100

Del.quantity : 40.0...41.0 1000 : (39.0...42.0) cm3 : 2.50

Spread

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0 3rd rack travel in: 7,0...7,5

rpm : 2100 Speed 4th rack travel in: 2500

: 0.00...1.00 Speed man

SET IDLE CONTROL LEVER POSITION

rpm Rack travel in mm : 1,4...1,5

LOW IDLE 1 Control lever

position degrees: 11...15 Setting point w/out bumper spring

M24

Speed rpm : 375 Rack travel in mm : 5.1	Speed rpm : 1900 Del.quantity cm3/ : 39.5,41.5
Testing: Speed rpm: 250 Minimum rack trave: 10.20 Speed rpm: 375 Rack travel in mm: 5.005.20 Rack travel in mm: 3.00 Speed rpm: 450550 Speed rpm: 1000 Maximum rack trave: 1.50	1000 s: (38.542.5) Spread cm3 : 2.50 1000 s: (3.00) Aneroid pressure h: 1100 Speed rpm : 500 * Del.quantity cm3/: 34.536.0 * 1000 s: (33.537.0)* Spread cm3 : 2.50 1000 s: (3.00) Aneroid pressure h: 1100 Speed rpm : 800**
SET IDLE AUXILIARY SPRING Speed rpm : 420 Rack travel in mm : 3,94,1 : (3,84,2)	Del.quantity cm3/: 37.539.0 ** 1000 s: (36.540.0) ** Spread cm3 : 2.50 1000 s: (3.00)
TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 12.8012.90 2nd speed rpm : 1400	STARTING FUEL DELIVERY Speed rpm : 100
Rack travel in m: 12.2012.50 3rd speed rpm : 1900 Rack travel in m: 11.4011.70 4th speed rpm : 500 * Rack travel in m: 12.0012.30 *	Del.quantity cm3/: 52.00.0 1000 s: (52.00.0) Rack travel in mm: 20.100.00
Sth speed rpm : 800** Rack travel in m: 12.4012.70** Aneroid/Altitude Compensator Test	1st version Aneroid pressure h: 1100 Speed rpm : 2100 Rack travel in mm : 7.007.50 Del.quantity cm3/: 22.026.0
1st version Setting Speed rpm : 1000 Pressure hPa : 950	1000 s: (21.027.0) Spread cm3 : 2.50 1000 s: (3.00) LOW IDLE
Rack travel mm : 0.000.20 Measurement Speed 1/min : 1000 1st pressure hPa : 900	Speed rpm : 375 Rack travel in mm : 5.005.20 Del.quantity cm3/ : 5.06.0 1000 s: (4.59.0)
Rack travel in m: 0.500.70 2nd pressure hPa : 750 Rack travel in m: 1.802.20	Spread cm3 : 1.00 1000 s: (1.50) SETTING PNUEUMATIC FAST IDLE (ELA)
FUEL DELIVERY CHARACTERISTICS	T (ELA)
1st version Aneroid pressure h: 1100 Speed rpm : 1400 Del.quantity cm3/ : 39.541.0	Speed rpm : 425 Rack travel in mm : 6,68,2 Del.quantity cm3/ : 11,519,5 1000 s: - Vacuum hPa : 400 Remarks:

Sliding sleeve pre-travel = 6.25 mm

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 375 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

Difference in start of delivery between max, and min. value = max. 1° angular displacement of cam

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 15.3°...15.7° (15.2...15.8°) angular displacement of cam following start of delivery of cylinder no. 1.

- * Setting point for negative torque control - negative retainer behind sliding sleeve
- ** Reference measurement:
 Control-rod travel and delivery too
 large position spiral spring
 downwards
 Control-rod travel and delivery too
 small position spiral spring upwards

Note remarks

Test sheet : MB 2,4 V10 : 22.03.91 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 074 896

Injection pump

Pump designation : PES4M55C32ORS110 : 0 410 054 956 EP type number

Governor

Governor design. : RSF375/2200M21 : 0 420 021 148 Governer no.

Customer-spec. information Customer : MB-NFZ

: 0M616 2.4L ADA Engine

: 55.0 1st version kW

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 012

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80

: (1.65...1.85)

Rack travel in mm : 20.00...0.00 : 1-3-4-2

Firing order

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.60...12.70

Del.quantity cm3/: 3.6...3.7

100 s: (3.5...3.8)

Spread cm3 : 0.2

100 s: (0.3)

rpm : 375.0 2nd speed Rack travel in mm: 6.1...6.3

Del.quantity cm3/: 0.6...0.7

100 s: (0.5...0.9)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed Aneroid pressure h: 1100

Del.quantity : 30.0...38.0)

: 2.50 Spread cm3

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0 3rd rack travel in: 7,8...8,2

rpm : 2350 Speed 4th rack travel in: 2950

Speed : 0.00...1.00 rom

SET IDLE CONTROL LEVER

POSITION

Speed : 1000 rpm

Rack travel in mm: 1,4...1,5

LOW IDLE 1 Control lever

position degrees: 8...12

Setting point w/out bumper spring

rpm : 375

Rack travel in mm: 6.2

Testina: Speed man Minimum rack trave: 10.00 : 375 Speed rpm Rack travel in mm : 6.10...6.30 Rack travel in mm : 2.00 Speed rpm : 700...800 : 1000 Speed rpm Maximum rack trave: 1.50 SET IDLE AUXILIARY SPRING : 450 Speed rom Rack travel in mm: 5,1...5,3 : (5,0...5,4) TORQUE CONTROL Torque control curve - 1st version rpm : 1000 1st speed Rack travel in m: 12.60...12.70 : 1700 2nd speed rpm Rack travel in m: 12.20...12.40 rpm : 2100 3rd speed Rack travel in m: 11.80...12.00 Aneroid/Altitude Compensator Test 1st version Settina : 1000 Speed rpm hPa : 950 Pressure : 0.00...0.20 Rack travel mm Measurement 1/min: 1000 Speed 1st prassure hPa : 900 Rack travel in m: 0.50...0.70 2nd pressure hPa : 750 Rack travel in m: 1.80...2.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100 : 1700 Speed rom Del.quantity cm3/: 38.0...40.0 1000 s: (37.0...41.0) Spread cm3 : 2.50 1000 s: (3.) Aneroid pressure h: 1100 rpm_ : 2100 Speed Del.quantity cm3/: 37.0...39.0 1000 s: (36.0...40.0) cm3 : 2.50

1000 s: (3.00)

STARTING FUEL DELIVERY

: 100 Speed rpm Del.quantity cm3/: 52.0...0.0 1000 s: (52.0...0.0)

Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version Aneroid pressure h: 1100 rpm

Rack travel in mm : 7.80...8.20 Del.quantity cm3/: 18.0...22.0 1000 s: (17.0...23.0)

: 2.50 cm3 Spread 1000 s: (3.00)

LOW IDLE

: 375 Speed rpm Rack travel in mm : 6.10...6.30 Del.quantity cm3/: 6.0...7.0 1000 s: (5.5...9.0)

cm3 : 1.00 Spread 1000 s: (1.50)

Remarks:

Sliding sleeve pre-travel = 6.0 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF -Control-lever position 49°, max. 0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min. Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE -Control lever at idle stop.
With n = 375 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm

Pin projection = 16.60...16.70 mm

Spread

Note remarks

: MB 2,0 r4 : 15.04.91 Test sheet Edition Replaces : 17.02.89 Test oil : ISO-4113

Combination no. : 0 400 074 903

Injection pump

Pump designation : PES4M55C32ORS169 EP type number : 0 410 054 959

Governor

Governor design. : RSF360/2300M60-9 Governer no. : 0 420 021 109

Customer-spec. information Customer : MB-PKW

Engine : 0M601-ECE

1st version kW : 53.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 2.00...2.10 Prestroke mm

: (1.95...2.15)
Rack travel in mm : 20.00...22.00
Firing order : 1-3-4-2

N₀1

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 3.2...3.3

100 s: (3.1...3.4)

cm3 : 0.2Spread

100 s: (0.3)

2nd speed rpm : 335.0 Rack travel in mm : 6.3...6.5 Del.quantity cm3/: 0.5...0.6

100 s: (0.4...0.9)

Spread cm3 : 0.1100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1100

32.0...33.0 1000 : (31.0...34.0) cm3 : 2.50 Del.quantity

Spread

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0 3rd rack travel in: 8,5...8,9 Speed rpm : 2500 4th rack travel in: 2950

: 0.00...1.00 Speed rpm

SET IDLE CONTROL LEVER **POSITION**

: 1000 rpm Rack travel in mm: 1,2...1,3

LOW IDLE 1 Control lever

position degrees: 12...16

Setting point w/out bumper spring

Speed rom Speed rpm : 100 Rack travel in mm: 6.4 Del.quantity cm3/: 52.0...0.0 1000 s: (52.0...0.0) Testina: Rack travel in mm : 20.10...0.00 : 225 Speed rom Minimum rack trave: 9.00 HIGH IDLE Speed : 335 rpm Rack travel in mm : 6.30...6.50 1st version Rack travel in mm : 2.00 Aneroid pressure h: 1100 Speed rpm: 2500
Rack travel in mm: 8.50...8.90
Del.quantity cm3/: 22.0...26.0
1000 s: (21.0...27.0) Speed : 610...710 CDM Speed : 1000 rom Maximum rack trave: 1.30 SET IDLE AUXILIARY SPRING Spread cm3 : 2.50rpm : 400 1000 s: (3.00) Rack travel in mm: 4,9...5,1 LOW IDLE TORQUE CONTROL Torque control curve - 1st version Speed rpm : 335 1st speed rpm : 1000 Rack travel in mm : 6.30...6.50 Del.quantity cm3/ : 5.0...6.0 Rack travel in m: 12.30...12.40 2nd speed rpm : 1800 1000 s: (4.5...9.0) Rack travel in m: 11.70...11.90 3rd speed rpm : 2200 cm3 : 1.00 Spread 1000 s: (1.50) Rack travel in m: 11.40...11.60 SETTING/TESTING ELECTRONIC IDLE Aneroid/Altitude REGULATION (ELR) Compensator Test Control lever at idle stop Speed rpm : 360 Rack travel in mm : (12,6...14,0) 1st version Del.quantity cm3/: - 1000 s: (29,0...37,0) Pressure hPa : 950 Rack travel mm : 0.00...0.20 : 1,8 Current A 1st pressure hPa : 900 Control lever at full-load stop Rack travel in m: 0.50...0.70 2nd pressure hPa : 750 : 2950 rpm Rack travel in mm : 0,0...1,0 Rack travel in m: 1.80...2.20 Current short-duration A: 3,0 FUEL DELIVERY CHARACTERISTICS Starting test rpm : 100 Speed Del.quantity cm3/: -1st version 1000 s: 52,0 / 1,8A min. Aneroid pressure h: 1100 rpm : 1800 Speed Remarks: Del.quantity cm3/: 34.0...35.5 1000 s: (33.0...36.5) Spread cm3 : 2.50 Sliding sleeve pre-travel = 6.5 mm 1000 s: (3.) Aneroid pressure h: 1100 Pin projection = 16.60...16.70 mm Speed rpm : 2200 Del.quantity cm3/ : 34.0...36.0 1000 s: (33.0...37.0) CHECKING THE IDLE-SPEED AUXILIARY Spread cm3 : 2.50SPRING CUTOFF -Control-lever position 49°, max.
0.2 mm control-rod travel deduction 1000 s: (3.00) allowable after switchover point (of starting cam) up to 1000 1/min. Control-lever position 46.5°, STARTING FUEL DELIVERY control-rod travel deduction must be

greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE -Control lever at idle stop. With n = 335 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1.

Note remarks

: MB 2,0 r5 : 15.04.91 Test sheet Edition Replaces : 28.05.90 Test oil : ISO-4113

Combination no. : 0 400 074 904

Injection pump

Pump designation : PES4M55C32ORS169 EP type number : 0 410 054 959

Governor

Governor design. : RSF375/2300M56-6 Governer no. : 0 420 021 110

Customer-spec. information Customer : MB-PKW

Engine : 0M601-ECE

1st version kW : 53.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00XZ.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10 : (1.95...2.15)

Rack travel in mm : 20.00...22.00 Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 3.2...3.3

100 s: (3.1...3.4)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 375.0 Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 0.5...0.6

100 s: (0.4...0.9) cm3 : 0.1 Spread

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1100

Del.quantity : 32.0...34.0)

: 2.50 Spread cm3 1000 : (3.00)

RATED SPEED

1st version

Control Lever

position degrees: 50...0 3rd rack travel in: 8,5...8,9 Speed rpm : 2500

4th rack travel in: 2950

: 0.00...1.00 Speed rpm

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000 Rack travel in mm: 1,2...1,3

LOW IDLE 1 Control leven

position aegrees: 12...16

Setting poin a/out bumper spring

Speed rpm Rack travel in mm: 6.5 Testing: Speed rpm : 250 Minimum rack trave: 11.00 : 375 rom Rack travel in mm : 6.40...6.60 Rack travel in mm : 2.00 rpm : 640...740 Speed rpm : 1000 Maximum rack trave: 1.30 SET IDLE AUXILIARY SPRING rpm : 400 Speed Rack travel in mm : 5,3...5,5 : (5,2...5,6) TORQUE CONTROL Torque control curve - 1st version rpm : 1000 1st speed Rack travel in m: 12.30...12.40 rpm : 1800 2nd speed Rack travel in m: 11.70...11.90 3rd speed rpm : 2200 Rack travel in m: 11.40...11.60 Aneroid/Altitude Compensator Test 1st version hPa : 950 Pressure Rack travel mm : 0.00...0.20 1st pressure hPa : 900 Rack travel in m: 0.50...0.70 2nd pressure hPa : 750 Rack travel in m: 1.80...2.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100 Speed rpm : 1800 Del.quantity cm3/: 34.0...35.5 1000 s: (33.0...36.5) cm3 : 2.50 Sprnad 1000 s: (3.0) Aneroid pressure h: 1100 Speed rpm : 2200 Del.quantity cm3/ : 34.0...36.0 1000 s: (33.0...37.0) Spread cm3 : 2.501000 s: (3.00) TESTING PNEUMATIC SHUTOFF DEVICE

Speed rpm : 100 Del.quantity cm3/ : 52.0...0.0 1000 s: (52.0...0.0) Rack travel in mm : 20.10...0.00 HIGH IDLE 1st version Aneroid pressure h: 1100 Speed rpm: 2500
Rack travel in mm: 8.50...8.90
Del.quantity cm3/: 22.0...26.0
1000 s: (21.0...27.0)
Spread cm3: 2.50 1000 s: (3.00) LOW IDLE Speed rpm : 375 Rack travel in mm : 6.40...6.60 Del.quantity cm3/: 5.0...6.0 1000 s: (4.5...9.0) Spread cm3 : 1.001000 s: (1.50) SETTING PNUEUMATIC FAST IDLE (ELA) Speed rom: 425
Rack travel in mm: 8,1...9,7
Del.quantity cm3/: 12,0...20,0
1000 s: hPa : 400 Vacuum Remarks: Sliding sleeve pre-travel = 6.5 mm Pin projection = 16.60...16.70 mm CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF -Control-lever position 49°, max. 0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min. Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

STARTING FUEL DELIVERY

control-rod travel = 0 mm

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1.

Note remarks

: MB 2,9 G : 15.04.91 Test sheet Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 075 931

Injection pump

Pump designation : PESSM55C320RS168 : 0 410 055 978 EP type number

Governor

Governor design. : RSF340/2000M70-8

: 0 420 021 154 Governer no.

Customer-spec. information Customer : MB-NFZ

Engine : OM602-D29 A,S,CH

1st version kW : 72.0

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 2.00...2.10 Prestroke mm

: (1.95...2.15)

Rack travel in mm : 20.00...22.00 : 1- 2- 4- 5-Firing order

N07

Phasina : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm: 12.50...12.60

Del.quantity cm3/: 3.8...3.9

100 s: (3.7...4.0)

Spread cm3 : 0.2

100 s: (0.3)

rpm : 315.0 2nd speed

Rack travel in mm: 5.3...5.5 Del.quantity cm3/: 0.5...0.6

100 s: (0.4...0.9)

cm3 : 0.1 Spread 100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1100

Del.quantity : 38.0...39.0

1000 : (37.0...40.0) : 2.50 Spread cm3

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0
3rd rack travel in: 7,0...7,5
Speed rpm : 2200

4th rack travel in: 2500

: 0.00...1.00 Speed rpm

SET IDLE CONTROL LEVER

POSITION

rpm : 1000 Speed

Rack travel in mm: 1,4...1,5

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

: 2000 Speed rpm Speed rpm Rack travel in mm: 5.4 Del.quantity cm3/: 39.5...41.5 1000 s: (38.5...42.5) Testing: cm3 : 2.50Spread : 250 1000 s: (3.00) Speed rpm Minimum rack trave: 7.00 Aneroid pressure h: 1100 rpm : 315 Speed : 500 * rom Del.quantity cm3/: 34.5...36.0 * 1000 s: (33.5...37.0)*

Spread cm3 : 2.50 Rack travel in mm : 5.30...5.50 Rack travel in mm : 2.50 Speed rpm: 500...600 Speed rpm: 1000 Maximum rack trave: 1.50 1000 s: (3.00) Aneroid pressure h: 1100 rpm_ : 800** Speed SET IDLE AUXILIARY SPRING Del.quantity cm3/: 36.5...38.0 ** rpm : 380 1000 s: (35.5...39.0)** Speed cm3 : 2.50 Rack travel in mm: 4,0...4,2 Spread : (3,9...4,3) 1000 s: (3.00) TORQUE CONTROL Torque control curve - 1st version STARTING FUEL DELIVERY 1st speed rpm : 1000 Rack travel in m: 12.50...12.60 and speed rpm : 1400 Rack travel in m: 12.10...12.40 2nd speed Speed : 100 rpm Del.quantity cm3/ : 52.0...0.0 3rd speed rpm : 2000 1000 s: (52.0...0.0) Rack travel in m: 11.60...11.90 Rack travel in mm : 20.10...().00 4th speed rpm : 500 Rack travel in m: 12.20...12.40 * HIGH IDLE rpm : 800 5th speed Rack travel in m: 12.30...12.50** 1st version Aneroid pressure h: 1100 Aneroid/Altitude Speed rpm : 2200 Rack travel in mm : 7.50...7.50 Compensator Test Del.quantity cm3/: 22.0...26.0 1000 s: (21.0...27.0) 1st version Spread cm3 : 2.50Setting 1000 s: (3.00) Speed : 1000 rpm Pressure hPa : 950 LOW IDLE Rack travel mm : 0.00...0.20 Speed rpm : 315
Rack travel in mm : 5.30...5.50
Del.quantity cm3/: 5.0...6.0
1000 s: (4.5...9.0) Measurement 1/min: 1000 Speed 1st pressure hPa : 900 cm3 : 1.00Spread Rack travel in m: 0.50...0.70 1000 s: (1.50) 2nd pressure hPa : 750 Rack travel in m: 1.80...2.20 SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR) FUEL DELIVERY CHARACTERISTICS Control lever at idle stop Speed rpm : 340 Rack travel in mm : (11,6...13,0) 1st version Del.quantity cm3/: -1000 s: (29.0...37,0) Aneroid pressure h: 1100 Speed rpm : 1400
Del.quantity cm3/: 38.0...39.5
1000 s: (37.0...40.5)
Spread cm3 : 2.50 Current A : 1,8 Control lever at full-load stop rpm 1000 s: (3.0) Rack travel in mm : 0,0...1,0 Aneroid pressure h: 1100

Current

short-duration A: 3,0

Starting test

Speed rpm : 100 Del.quantity cm3/: -min. 1000 s: 52,0 / 1,8A

Remarks:

Pin projection = 16.60...16.70 mm

Sliding sleeve pre-travel = 6.25 mm

TESTING PNEUMATIC SHUTOFF DEVICE -Control lever at idle stop. With n = 315 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 15.3°...15.7° (15.2...15.8°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

- * Setting point for negative torque control - negative retainer behind sliding sleeve
- ** Reference measurement: Control-rod travel and delivery too large - position spiral spring downwards Control-rod travel and delivery too small - position spiral spring upwards

Note remarks

Test sheet : MB 2,9 G1 Edition : 15.04.91

Replaces

Test oil : ISO-4113

Combination no. : 0 400 075 932

Injection pump

Pump designation : PES5M55C32GRS168 EP type number : 0 410 055 978

Governor

Governor design: : RSF340/1900M70-9 Governer no. : 0 420 021 155

Customer-spec. information Custoner : MB-NFZ

Engine : 0M602-D29 A,S,CH

1st version kW : 70.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1-2-4-5-3

: 0-72-144-216-288 Phasing

Tolerance $+ - ^{\circ} : 0.00 (1.00)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 3.8...3.9

100 s: (3.7...4.0)

cm3 : 0.2Spread

100 s: (0.3)

2nd speed rpm : 315.0
Rack travel in mm : 5.3...5.5
Del.quantity cm3/ : 0.5...0.6
100 s: (0.4...0.9)
Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1100

Del.quantity : 38.0...39.0 1000 : (37.0...40.0)

: 2.50 cm3 Spread

1000 : (3.00)

RATED SPEED

1st version

Control Lever

position degrees: 50...0

3rd rack travel in: 7,0...7,5
Speed rpm : 2100
4th rack travel in: 2500

rpm : 0.00...1.00Speed

SET IDLE CONTROL LEVER

POSITION

rpm : 1000 Speed Rack travel in mm: 1,4...1,5

LOW IDLE 1 Control lever

position degrees: 12...16

Setting point w/out bumper spring

M10

Speed rpm: 315 Rack travel in mm: 5.4 Testing: Speed rpm: 250 Minimum rack trave: 7.00 Speed rpm: 315 Rack travel in mm: 5.305.50 Rack travel in mm: 2.50 Speed rpm: 500600 Speed rpm: 1000 Maximum rack trave: 1.50 SET IDLE AUXILIARY SPRING Speed rpm: 380 Rack travel in mm: 4,04,2 : (3,94,3)	Speed rpm: 1900 Del.quantity cm3/: 39.541.5 1000 s: (38.542.5) Spread cm3: 2.50 1000 s: (3.00) Aneroid pressure h: 1100 Speed rpm: 500 * Del.quantity cm3/: 34.536.0 * 1000 s: (33.537.0) * Spread cm3: 2.50 1000 s: (3.00) Aneroid pressure h: 1100 Speed rpm: 800** Del.quantity cm3/: 36.538.0 ** 1000 s: (35.539.0)** Spread cm3: 2.50 1000 s: (35.539.0)** Spread cm3: 2.50 1000 s: (3.00)
TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 12.5012.60 2nd speed rpm : 1400 Rack travel in m: 12.1012.40 3rd speed rpm : 1900	Speed rpm : 100 Del.quantity cm3/ : 52.00.0
Rack travel in m: 1700 * 4th speed rpm : 500 * Rack travel in m: 12.2012.40 * 5th speed rpm : 800** Rack travel in m: 12.3012.50**	1000 s: (52.00.0) Rack travel in mm : 20.100.00 HIGH IDLE 1st version
Aneroid/Altitude Compensator Test 1st version Setting	Aneroid pressure h: 1100 Speed rpm : 2100 Rack travel in mm : 7.007.50 Del.quantity cm3/: 22.026.0 1000 s: (21.027.0) Spread cm3 : 2.50 1000 s: (3.00)
Speed rpm : 1000 Pressure hPa : 950 Rack travel mm : 0.000.20	LOW IDLE
Measurement Speed 1/min: 1000	Speed rpm : 315 Rack travel in mm : 5.305.50 Del.quantity cm3/ : 5.06.0 1000 s: (4.59.0)
1st pressure hPa : 900 Rack travel in m: 0.500.70 2nd pressure hPa : 750 Rack travel in m: 1.802.20	Spread cm3 : 1.00 1000 s: (1.50) SETTING/TESTING ELECTRONIC IDLE
FUEL DELIVERY CHARACTERISTICS	+ REGULATION (ELR) + Control lever at idle stop + Speed rpm : 340
1st version Aneroid pressure h: 1100 Speed rpm : 1400 Del.quantity cm3/: 38.039.5 1000 s: (37.040.5) Spread cm3 : 2.50 1000 s: (3.0) Aneroid pressure h: 1100	Rack travel in mm : (11.613,0) Del.quantity cm3/:- 1000 s: (29,037,0) Current A : 1,8 Control lever at full-load stop Speed rpm : 2500 Rack travel in mm : 0,01,0

Current

short-duration A: 3,0

Starting test

Speed rpm : 100
Del.quantity cm3/: min. 1000 s: 52,0 / 1,8A

Remarks:

Pin projection = 16.60...16.70 mm

Sliding sleeve pre-travel = 6.25 mm

TESTING PNEUMATIC SHUTOFF DEVICE -Control lever at idle stop. With $n = 315 \frac{1}{min}$, and $pu = 450 \frac{1}{min}$ control rod must move quickly to control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 15.3°...15.7° (15.2...15.8°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

- * Setting point for negative torque control - negative retainer behind sliding sleeve
- ** Reference measurement: Control-rod travel and delivery too large - position spiral spring downwards Control-rod travel and delivery too small - position spiral spring upwards

Note remarks

: MB 2,9 G2 Test sheet : 15.04.91 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 075 933

Injection pump

Pump designation : PES5M55C32ORS168 EP type number : 0 410 055 978

Governor

Governor design: RSF350/1900M69-7

: 0 420 021 151 Governer no.

Customer-spec. information Customer : MB-NFZ

: 0M602-D29 A,S,CH Engine

1st version kW : 70.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening.

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 2.00...2.10 Prestroke mm

: (1.95...2.15)

Rack travel in mm : 20.00...22.00 Firing order : 1-2-4-5-3

N13

Phasing : 0-72-144-216-288

Tolerance $+ - ^{\circ} : 0.00 (1.00)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 3.8...3.9

190 s: (3.7...4.0)

cm3 : 0.2Spread

100 s: (0.3)

rpm : 350.02nd speed Rack travel in mm : 5.2...5.4

Del.quantity cm3/: 0.5...0.6

100 s: (0.4...0.9) Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000Aneroid pressure h: 1100

Del.quantity : 38.0...39.0

1000 : (37.0...40.0)

: 2.50 Spread cm3

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0 3rd rack travel in: 7,0...7,5

rom : 2100 Speed 4th rack travel in: 2500

rpm : 0.00...1.00Speed

SET IDLE CONTROL LEVER

POSITION

Speed maj i : 1000

Rack travel in mm: 1,4...1,5

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm : 5.3	+ Speed rpm : 1900 + Del.quantity cm3/ : 39.541.5 + 1000 s: (38.542.5)
Testing: Speed rpm : 250	- Spread cm3 : 2.50 1000 s: (3.00)
Minimum rack trave: 9.20 Speed rpm : 350	+ Aneroid pressure h: 1100
Rack travel in mm : 5.205.40 Rack travel in mm : 3.00	- Speed rpm : 500 * - Del.quantity cm3/ : 34.536.0 * - 1000 s: (33.537.0) *
Speed rpm: 470570 Speed rpm: 1000	Spread cm3 : 2.50 1000 s: (3.00)
Maximum rack trave: 1.50	Aneroid pressure h: 1100 Speed rpm: 800***
SET IDLE AUXILIARY SPRING Speed rpm : 380	+ Del.quantity cm3/: 36.538.0 **
Rack travel in mm: 4,24,4	1000 s: (35.539.0)** - Spread cm3 : 2.50
: (4,14,5)	1000 s: (3.00)
TORQUE CONTROL Torque control curve — 1st version	STARTING FUEL DELIVERY
1st speed rpm : 1000 Rack travel in m: 12.5012.60	‡
2nd speed rpm : 1400 Rack travel in m: 12.1012.40	+ Speed rpm : 100 + Del.quantity cm3/ : 52.00.0
3rd speed rpm : 1900 Rack travel in m: 11.6011.90	1000 s: (52.00.0) Rack travel in mm : 20.100.00
4th speed	HIGH IDLE
5th speed	† 1st version
Aneroid/Altitude	Aneroid pressure h: 1100 Speed rpm : 2100
Compensator Test	Rack travel in mm : 7.007.50 Del.quantity cm3/ : 22.026.0
1st version	1000 s: (21.027.0) Spread cm3 : 2.50
Setting Speed rpm : 1000	1000 s: (3.00)
Pressure hPa : 950 Rack travel mm : 0.000.20	LOW IDLE
Measurement	+ Speed rpm : 350 + Rack travel in mm : 5.205.40
Speed 1/min: 1000	Del.quantity cm3/: 5.06.0 1000 s: (4.59.0)
1st pressure hPa : 900 Rack travel in m: 0.500.70	Spread cm3 : 1.00 1000 s: (1.50)
2nd pressure hPa : 750 Rack travel in m: 1.802.20	SETTING PNUEUMATIC FAST IDLE
FUEL DELIVERY CHARACTERISTICS	(ELA)
LOCE DESTABLL CHARACTERISTICS	Frank mm . /00
1st version Aneroid pressure h: 1100	+ Speed rpm : 400 + Rack travel in mm : 5,26,8
Speed rpm : 1400 Del.quantity cm3/: 38.039.5	+ Del.quantity cm3/: 5,013,0 + 1000 s: -
1000 s: (37.040.5)	+ Vacuum hPa : 400
Spread cm3 : 2.50 1000 s: (3.0)	+ Remarks: + :
Aneroid pressure h: 1100	†

N14

Pin projection = 16.60...16.70 mm

Sliding sleeve pre-travel = 6.25 mm

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 350 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 15.3°...15.7° (15.2...15.8°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

- * Setting point for negative torque control negative retainer behind sliding sleeve
- ** Reference measurement:
 Control-rod travel and delivery too
 large position spiral spring
 downwards
 Control-rod travel and delivery too
 small position spiral spring upwards

Note remarks

: MB 2,5 C5 Test sheet : 15.04.91 **Edition** : 13.11.89 Replaces Test oil : ISO-4113

Combination no. : 0 400 075 940

Injection pump

Pump designation : PES5M55C32ORS173 EP type number : 0 410 055 976

Governor

Governor design. : RSF340/2300M60-26 Governer no. : 0 420 021 133

Customer-spec. information Customer : MB-PKW

Engine : 0M602-Abgl. MJ90

1st version kW : 64.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80

: (1.65...1.85)

Rack travel in mm : 20.00...22.00

Firing order : 1-2-4-5-3 Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 12.40...12.50

Del.quantity cm3/: 3.1...3.2

100 s: (3.0...3.3)

Spread cm3 : 0.2

100 s: (0.3)

rpm : 315.0 2nd speed Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 0.5...0.6

100 s: (0.4...0.9)

cm3 : 0.1 Spread

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000Aneroid pressure h: 1100

31.5...32.5 1000 : (30.5...33.5) Del.quantity

Spread cm3 : 2.50 1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0 3rd rack travel in: 9,1...9,5 Speed rpm : 2500

4th rack travel in: 2950

: 0.00...1.00 Speed rpm

SET IDLE CONTROL LEVER

POSITION

rpm

Rack travel in mm: 1,4...1,5

LOW IDLE 1 Control lever

position degrees: 12...16

Setting point w/out bumper spring

N16

Speed cm3 : 2.50rpm : 315 Spread 1000 s: (3.00) Rack travel in mm: 6.5 Testing: Speed : 220 STARTING FUEL DELIVERY rpm Minimum rack trave: 8.00 Speed : 315 rpm Rack travel in mm : 6.40...6.60 Speed rpm : 100 Del.quantity cm3/: 52.0...0.0 1000 s: (52.0...0.0) Rack travel in mm: 2.50 : 600...700 rom : 1000 Rack travel in mm : 20.10...0.00 Speed man Maximum rack trave: 1.50 HIGH IDLE SET IDLE AUXILIARY SPRING rpm : 380 Speed rpm . 565 Rack travel in mm : 5,2...5,4 : (5,1...5,5) Speed 1st version Aneroid pressure h: 1100 rpm : 2500 Speed Rack travel in mm : 9.10...9.50 TORQUE CONTROL Del.quantity cm3/: 22.0...26.0 1000 s: (21.0...27.0) Torque control curve - 1st version 1st speed rpm : 1000 cm3 : 2.50 Spread Rack travel in m: 12.40...12.50 1000 s: (3.00) 2nd speed rpm : 1800 Rack travel in m: 11.80...12.00

3rd speed rpm : 2200

Rack travel in m: 11.50...11.70 LOW IDLE rpm : 315 Speed Rack travel in mm : 6.40...6.60 Del.quantity cm3/ : 5.0...6.0 Aneroid/Altitude Compensator Test 1000 s: (4.5...9.0) Spread cm3 : 1.00 1000 s: (1.50) 1st version Settina SETTING/TESTING ELECTRONIC IDLE : 1000 Speed REGULATION (ELR) rom hPa : 950 Pressure : 0.00...0.20 Rack travel mm Control lever at idle stop rpm : 340 Speed Measurement Rack travel in mm: (13,0...14,4) 1/min: 1000 Del.quantity cm3/: -1000 s: (29,0...37,0) Speed : 1,8 1st pressure hPa : 900 Current A Rack travel in m: 0.50...0.70 Control lever at full-load stop : 2950 2nd pressure hPa : 750 Speed Rack travel in m: 1.80...2.20 Rack travel in mm: 0,0...1,0 Current FUEL DELIVERY CHARACTERISTICS short-duration A: 3,0 Starting test rpm : 100 Speed Del.quantity cm3/: -min. 1000 s: 52,0 / 1,8 A 1st version Aneroid pressure h: 1100 min. Speed : 1800 rpm Del.quantity cm3/: 34.5...36.0 Remarks: 1000 s: (33.5...37.0) cm3 : 2.50 Spread Pin projection = 16.60...16.70 mm 1000 s: (3.0) Aneroid pressure h: 1100 Speed rpm : 2200 Del.quantity cm3/ : 33.0...35.0 Sliding sleeve pre-travel = 6.5 mm 1000 s: (32.0...36.0) CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max. 0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min. Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 315 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 17.3°...17.7° (17.2...17.8°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Note remarks

: MB 2,5 C8 : 15.04.91 Test sheet **Fdition** Replaces : 13.11.89 Test oil : ISO-4113

Combination no. : 0 400 075 941

Injection pump

Pump designation : PES5M55C32ORS173 EP type number : 0 410 055 976

Governor

Governor design. : RSF350/2300M56-11 Governer no. : 0 420 021 131

Customer-spec, information Customer : MB-PKW

Engine : 0M602-Abql, MJ90

1st version kW : 64.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80 : (1.65...1.85)

Rack travel in mm : 20.00...22.00 : 1-2-4-5-3 Firing order

Phasina : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 12.40...12.50

Del.quantity cm3/: 3.1...3.2

100 s: (3.0...3.3)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 350.0 Rack travel in mm : 6.4...6.6

Del.quantity cm3/: 0.5...0.6 100 s: (0.4...0.9)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1100

Del.quantity : 31.5...32.5

1000 : (30.5...33.5) Spread : 2.50 cm3

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0 3rd rack travel in: 9,1...9,5

rpm : 2500 Speed 4th rack travel in: 2950

: 0.00...1.00 Speed rpm

SET IDLE CONTROL LEVER **POSITION**

rpm : 1000 Rack travel in mm: 1,4...1,5

LOW IDLE 1 Control Lever

position degrees: 12...16

Setting point w/out bumper spring

Speed rom : 350 cm3 : 2.50Spread Rack travel in mm: 6.5 1000 s: (3.00) Testing: Speed rpm : 220 STARTING FUEL DELIVERY Minimum rack trave: 10.00 Speed rpm : 350 Rack travel in mm : 6.40...6.60 Speed rpm : 100 Del.quantity cm3/ : 52.0...0.0 Rack travel in mm: 2.50 : 600...700 1000 s: (52.0...0.0) Speed rom : 1000 Speed rpm Rack travel in mm : 20.10...0.00 Maximum rack trave: 1.50 HIGH IDLE SET IDLE AUXILIARY SPRING Speed rpm : 400 1st version Rack travel in mm : 5,2...5,4 : (5,1...5,5) Aneroid pressure h: 1100 rpm : 2500 Speed Rack travel in mm : 9.10...9.50 Del.quantity cm3/ : 22.0...26.0 TORQUE CONTROL Torque control curve - 1st version 1000 s: (21.0...27.0) rpm : 1000 1st speed cm3 : 2.50 Spread Rack travel in m: 12.40...12.50 1000 s: (3.00) 2nd speed : 1800 rom Rack travel in m: 11.80...12.00 LOW IDLE : 2200 3rd speed rpm Speed rpm : 350 Rack travel in mm : 6.40...6.60 Rack travel in m: 11.50...11.70 Del.quantity cm3/: 5.0...6.0 1000 s: (4.5...9.0) Aneroid/Altitude Compensator Test cm3 : 1.00 Spread 1000 s: (1.50) 1st version Setting SETTING PNUEUMATIC FAST IDLE : 1000 Speed rpm (ELA) hPa : 950 Pressure Rack travel mm : 0.00...0.20 Speed rpm : 400 Rack travel in mm : (6,7...8,1) Measurement 1/min: 1000 Speed Del.quantity cm3/: -1000 s: (5,0...13,0) 1st pressure hPa : 900 Vacuum hPa : 400 Rack travel in m: 0.50...0.70 2nd pressure hPa : 750 Remarks: Rack travel in m: 1.80...2.20 Pin projection = 16.60...16.70 mm FUEL DELIVERY CHARACTERISTICS Sliding sleeve pre-travel = 6.5 mm 1st version Aneroid pressure h: 1100 CHECKING THE IDLE-SPEED AUXILIARY Speed rpm : 1800 Del.quantity cm3/ : 34.5...36.0 1000 s: (33.5...37.0) SPRING CUTOFF -Control-lever position 49°, max.
0.2 mm control-rod travel deduction Spread cm3 : 2.50 allowable after switchover point (of 1000 s: (3.0) starting cam) up to 1000 1/min. Aneroid pressure h: 1100 Control-lever position 46.5°, rpm : 2200 Speed control-rod travel deduction must be Del.quantity cm3/: 33.0...35.0 1000 s: (32.0...36.0) greater than 0.2 mm after switchover point (of starting cam).

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 350 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 17.3°...17.7° (17.2...17.8°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Note remarks

: MB 2,9 D Test sheet Edition : 15.04.91 Replaces : 13.11.89 Test oil : ISO-4113

Combination no. : 0 400 075 943

Injection pump

Pump designation : PES5M55C32ORS168 EP type number : 0 410 055 978

Governor

Governor design. : RSF350/1700M69-5 : 0 420 021 147 Governer no.

Customer-spec. information Custor ~ : MB-NFZ

Engine : 0M602-2.9L

1st version kW : 62.0

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 20.00...22.00 Firing order : 1-2-4-5-3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 3.6...3.7

100 s: (3.5...3.8)

cm3 : 0.2 Spread

100 s: (0.3)

rpm : 350.0 2nd speed

Rack travel in mm: 5.5...5.7 Del.quantity cm3/: 0.5...0.6

100 s: (0.4...0.9) cm3 : 0.1

Spread 100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1100

Del.quantity : 36.0...37.0

1000 : (35.0...38.0) cm3 : 2.50 1000 : (3.00) Spread

RATED SPEED

1st version

Control lever

position degrees: 50...0 3rd rack travel in: 9,0...9,5

rpm : 1800 Speed 4th rack travel in: 2300

: 0.00...1.00 Speed rpm

SET IDLE CONTROL LEVER POSITION

rom Rack travel in mm : 1,4...1,5

LOW IDLE 1 Control lever

position degrees: 12...16

Setting point w/out bumper spring

N22

Speed rpm : 350 Rack travel in mm : 5.6 Testing:	+ Speed rpm : 1650 - Del.quantity cm3/: 36.538.5 + 1000 s: (35.539.5) - Spread cm3 : 2.50
Speed rpm: 250 Minimum rack trave: 9.20 Speed rpm: 350 Rack travel in mm: 5.505.70 Rack travel in mm: 3.00 Speed rpm: 520620 Speed rpm: 1000 Maximum rack trave: 1.50	1000 s: (3.00) Aneroid pressure h: 1100 Speed rpm: 500 * Del.quantity cm3/: 32.033.5 * 1000 s: (31.034.5)* Spread cm3: 2.50 1000 s: (3.00) Aneroid pressure h: 1100 Speed rpm: 800**
SET IDLE AUXILIARY SPRING Speed rpm : 380 Rack travel in mm : 4,44,6 : (4,34,7)	Del.quantity cm3/: 34.536.0 ** 1000 s: (33.537.0) ** Spread cm3 : 2.50 1000 s: (3.00)
TORQUE CONTROL Torque control curve – 1st version 1st speed rpm : 1000 Rack travel in m: 12.3012.40	STARTING FUEL DELIVERY
2nd speed rpm : 1400 Rack travel in m: 11.6011.90 3rd speed rpm : 1650 Rack travel in m: 11.4011.70	Speed rpm : 100 Del.quantity cm3/: 52.00.0 1000 s: (52.00.0) Rack travel in mm : 20.100.00
4th speed rpm : 500 * Rack travel in m: 11.9012.20 * 5th speed rpm : 800** Rack travel in m: 12.1012.40**	HIGH IDLE 1st version Aneroid pressure h: 1100
Aneroid/Altitude Compensator Test	Speed rpm : 1800 - Rack travel in mm : 9.009.50 - Del.quantity cm3/ : 28.032.0 - 1000 s: (27.033.0)
1st version Setting Speed rpm : 1000 Pressure hPa : 950	Spread cm3 : 2.50 1000 s: (3.00)
Rack travel mm : 0.000.20 Measurement Speed 1/min : 1000	Speed rpm : 350 Rack travel in mm : 5.505.70 Del.quantity cm3/: 5.06.0
1st pressure hPa : 900 Rack travel in m: 0.500.70 2nd pressure hPa : 750	1000 s: (4.59.0) - Spread cm3 : 1.00 - 1000 s: (1.50)
Rack travel in m: 1.802.20 FUEL DELIVERY CHARACTERISTICS	SETTING PNUEUMATIC FAST IDLE (ELA)
1st version Aneroid pressure h: 1100 Speed rpm : 1400 Del.quantity cm3/: 36.037.5 1000 s: (35.038.5) Spread cm3 : 2.50 1000 s: (3.0) Aneroid pressure h: 1100	Speed rpm: 400 Rack travel in mm: 5,67,2 Del.quantity cm3/: 5,013,0 1000 s: - Vacuum hPa: 400 Remarks:

Pin projection = 16.60...16.70 mm

Sliding sleeve pre-travel = 6.25 mm

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 350 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 15.3°...15.7° (15.2...15.8°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

- * Setting point for negative torque control - negative retainer behind sliding sleeve
- ** Reference measurement:
 Control-rod travel and delivery too
 large position spiral spring
 downwards
 Control-rod travel and delivery too
 small position spiral spring upwards

Note remarks

: MB 2,5 01 : 15.04.91 Test sheet Edition : 13.11.89 Replaces Test oil : ISO-4113

Combination no. : 0 400 075 947

Injection pump

Pump designation : PES5M55C32ORS168 EP type number : 0 410 055 978

Governor

Governor design. : RSF340/1900M70-5 Governer no. : 0 420 021 124

Customer-spec. information Customer : MB-NFZ

: 0M602-2.9L Engine

1st version kW : 70.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening.

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 2.00...2.10 Prestroke mm

: (1.95...2.15)

Rack travel in mm : 20.00...22.00 Firing order : 1-2-4-5-3

: 0-72-144-216-288 Phasing

Talerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

rpm : 10001st speed

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 3.8...3.9

100 s: (3.7...4.0)

cm3 : 0.2 Spread

100 s: (0.3)

2nd speed rpm : 315.0Rack travel in mm : 5.3...5.5 Del.quantity cm3/: 0.5...0.6

100 s: (0.4...0.9) cm3 : 0.1

Spread 100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1100

: 33.0...39.0 Del.quantity 1000 : (37.0...40.0) cm3 : 2.50 1000 : (3.00)

Spread

RATED SPEED

1st version

Control Lever

position degrees: 50...0 3rd rack travel in: 7,0...7,5

Speed rpm : 2100 4th rack travel in: 2500

: 0.00...1.00 Speed rpm

SET IDLE CONTROL LEVER

POSITION

rpm Rack travel in mm : 1,4...1,5

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

N25

Speed rpm: 315 Rack travel in mm: 5.4 Testing: Speed rpm: 250 Minimum rack trave: 7.00 Speed rpm: 315 Rack travel in mm: 5.365.50 Rack travel in mm: 2.50 Speed rpm: 500600 Speed rpm: 1000 Maximum rack trave: 1.50 SET IDLE AUXILIARY SPRING Speed rpm: 380 Rack travel in mm: 4,04,2 : (3,94,3)	Speed rpm: 1900 Del.quantity cm3/: 39.541.5 1000 s: (38.542.5) Spread cm3: 2.50 1000 s: (3.00) Aneroid pressure h: 1100 Speed rpm: 500 * Del.quantity cm3/: 34.536.0 * 1000 s: (33.537.0) * Spread cm3: 2.50 1000 s: (3.00) Aneroid pressure h: 1100 Speed rpm: 800** Del.quantity cm3/: 36.538.0 ** 1000 s: (35.539.0)** Spread cm3: 2.50 1000 s: (35.539.0)**
TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000	1000 s: (3.00) STARTING FUEL DELIVERY
Rack travel in m: 12.5012.60 2nd speed rpm : 1400 Rack travel in m: 12.1012.40 3rd speed rpm : 1900 Rack travel in m: 11.6011.90 4th speed rpm : 500 * Rack travel in m: 12.2012.40 * 5th speed rpm : 800**	Speed rpm : 100 Del.quantity cm3/: 52.00.0 1000 s: (52.00.0) Rack travel in mm : 20.100.00 HIGH IDLE
Rack travel in m: 12.3012.50** Aneroid/Altitude Compensator Test 1st version	1st version Aneroid pressure h: 1100 Speed rpm : 2100 Rack travel in mm : 7.007.50 Del.quantity cm3/: 22.026.0 1000 s: (21.027.0) Spread cm3 : 2.50
Setting Speed rpm : 1000 Pressure hPa : 950 Rack travel mm : 0.000.20	1000 s: (3.00)
Measurement Speed 1/min: 1000 1st pressure hPa: 900 Rack travel in m: 0.500.70	Speed rpm: 315 Rack travel in mm: 5.305.50 Del.quantity cm3/: 5.06.0 1000 s: (4.59.0) Spread cm3: 1.00 1000 s: (1.50)
2nd pressure hPa : 750 Rack travel in m: 1.802.20 FUEL DELIVERY CHARACTERISTICS	SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)
1st version Aneroid pressure h: 1100 Speed rpm : 1400 Del.quantity cm3/: 38.039.5 1000 s: (37.040.5) Spread cm3 : 2.50 1000 s: (3.0) Aneroid pressure h: 1100	Control lever at idle stop Speed rpm : 340 Rack travel in mm : (11,613,0) Del.quantity cm3/:- 1000 s: (29,037,0) Current A : 1,8 Control lever at full-load stop Speed rpm : 2500 Rack travel in mm : 0,01,0

Current

short-duration A: 3,0

Starting test

Speed rpm : 100

Del.quantity cm3/: -min. 1000 s: 52,0 / 1,8 A min.

Remarks:

Pin projection = 16.60...16.70 mm

Sliding sleeve pre-travel = 6.25 mm

TESTING PNEUMATIC SHUTOFF DEVICE -Control lever at idle stop. With n = 315 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 15.3°...15.7° (15.2...15.8°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

- * Setting point for negative torque control - negative retainer behind sliding sleeve
- ** Reference measurement: Control-rod travel and delivery too large - position spiral spring downwards Control-rod travel and delivery too small - position spiral spring upwards